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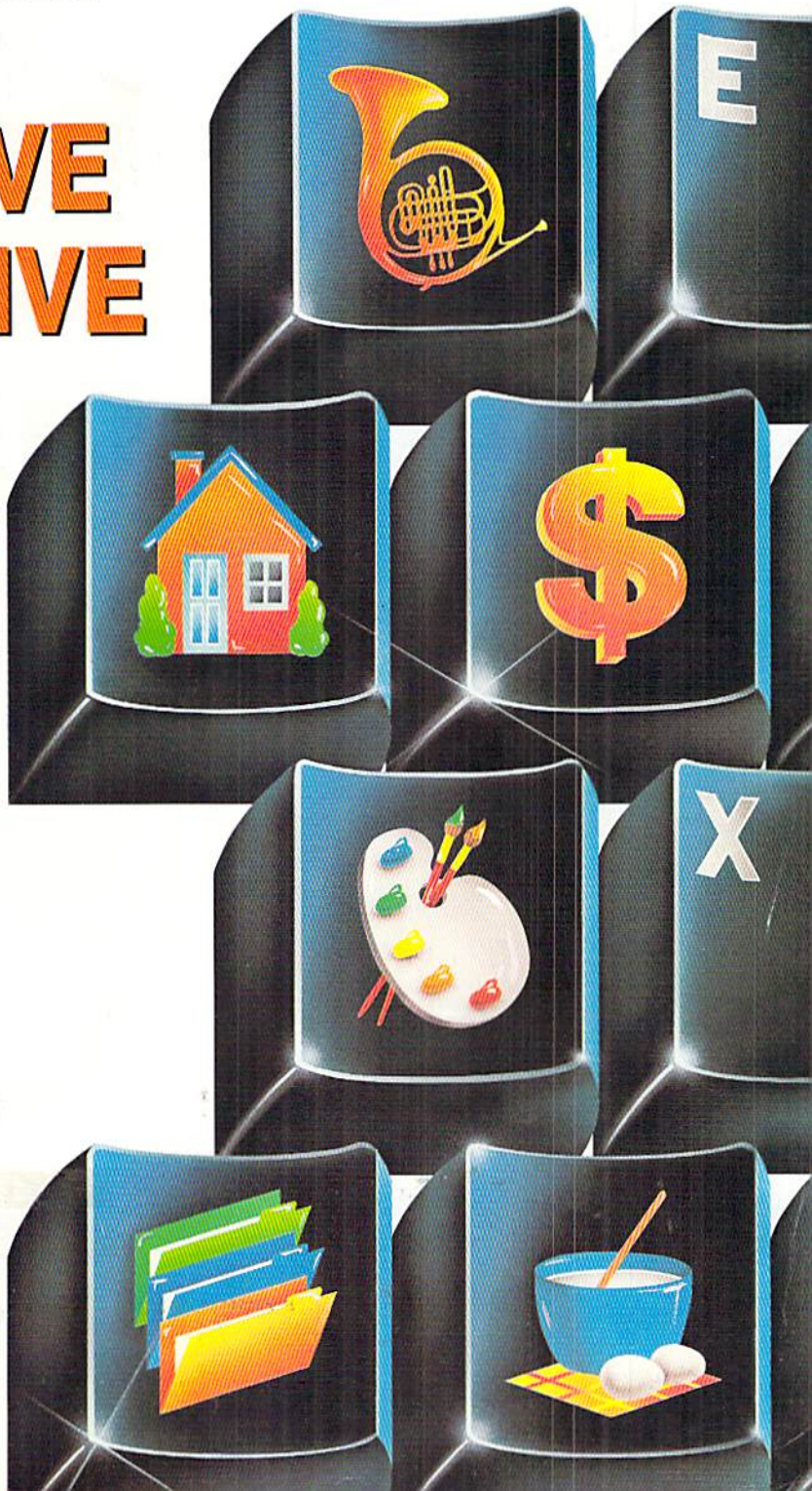

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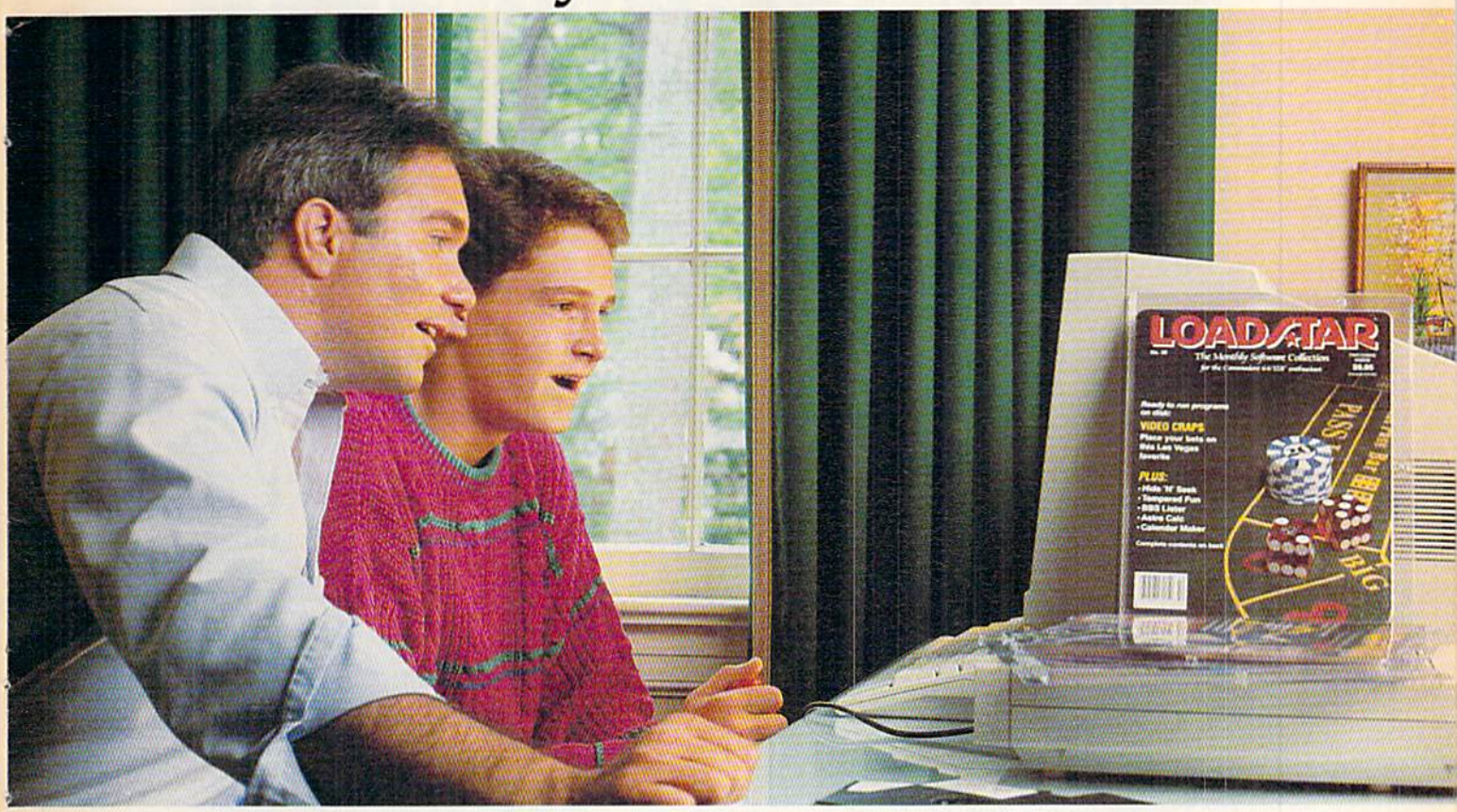

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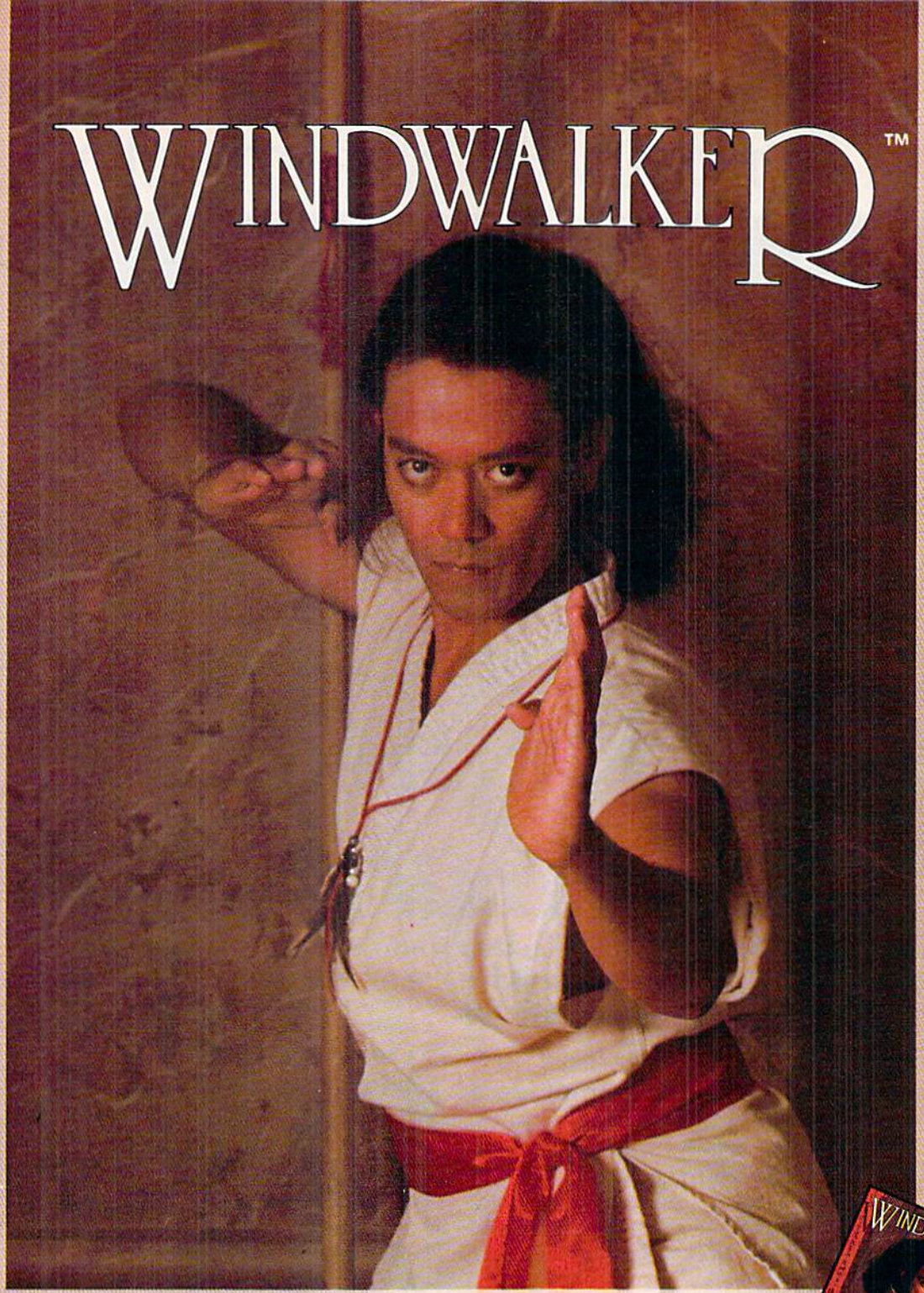

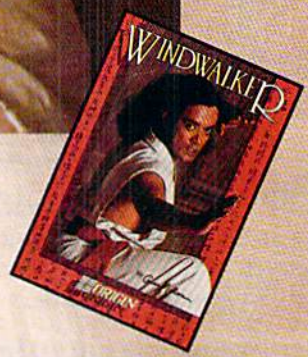

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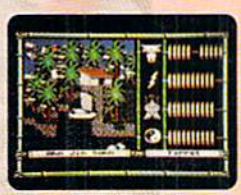

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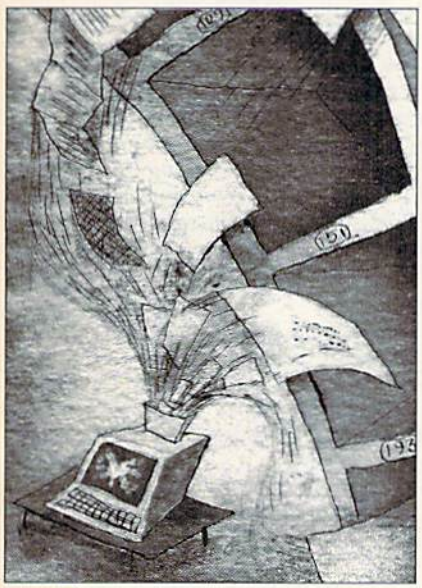

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RUNning Ruminations

You don't need to be a psychic to know what's on Commodore's mind these days. Every signal that comes out of the Pennsylvania headquarters shouts, "The future is the Amiga!"

The company, under the direction of its new president, Harold Copperman, has embarked upon an aggressive strategy to position the Amiga competitively against the Apple and IBM in the business, education and vertical markets.

Unfortunately, this energy directed towards the high-end market is unmatched in the home computer arena, which was once dominated by Commodore. Commodore's attempted turnaround is apparently headed in the wrong direction. Instead of trying to serenade the federal government and big business, Commodore should be attempting to shore up its badly battered image among the home computing crowd.

Who will serve the home computer market in the coming years?

The Commodore name, once synonymous with price and performance, is now better known for lack of support, management upheavals, drooping sales and lethargy. Despite all of this, the king of the 8-bits is still the C-64, which has introduced millions to the world of computing. It may be long in the tooth, but it remains the only viable mass-market computer. For under $500, you can get a complete system—computer, monitor, disk drive and joystick.

Commodore has stated, and *RUN* has duly reported, that the company "will actively pursue new sales and merchandising strategies for the. . .C-64," but we see little evidence of this. If Commodore is to keep the respect of its large user base, it should either aggressively support its existing 8-bit line or offer an alternative.

Our sources indicate that there is waning enthusiasm at Commodore for the C-65 project, which Commodore has been working on this year to replace the 64/128 line. With its enhanced color, graphics and sound, built-in disk drive and increased speed, this new 8-bit computer would be the answer that millions of home computerists are looking for. Best of all, it would be compatible with most existing C-64 software. And at a low price!

However, Commodore, reacting to the bad press this machine has received and reluctant to be associated with the low-end market, apparently is lukewarm toward this product.

Commodore's other alternative is to reduce the price of the Amiga 500, which, at over $800 for computer and monitor, does not meet the price criterion of the home market.

As we enter a new decade, I urge Commodore to reconsider its attitude toward the low-end market. It seems folly to abandon a market it has dominated during the last decade in favor of one that's full of uncertainties.

Here's hoping that the new year brings *RUN* readers happiness, prosperity and glitch-free computing. And here's hoping that Commodore re-addresses the needs of the home computer market. The company owes it to the millions of first-time computer buyers and loyal Commodore computerists.

Dennis Brisson

Dennis Brisson
Editor-in-Chief

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MAGIC

Discover how to clear your screen, generate truly random numbers and get an animated cursor.

By TIM WALSH

$56B VERIFYING WITH RUN SCRIPT

Here's an almost foolproof method of determining if you're working with the latest version of a document created with RUN Script 64 or 128. Load in one file of the document, and then press F1, followed by the F key, to display the number of bytes free in the command bar at the top of the screen. Then load in the other version of the document and repeat the process. Compare the number of bytes free. If they match, the chances are good that the documents are identical. If you remember adding text to the first version of the document, the latest version will show fewer bytes free. If, on the other hand, you deleted text, the version with more bytes free will be the latest.

—TIM WALSH, MAGIC COLUMNIST

$56C ILLEGAL C-128 TRAPPING SEASON

You can use the unimplemented Off and Quit commands in Basic 7.0 to develop programming subroutines similar to those found in Amiga, Apple Macintosh and other 68000-series computers. I've written a short routine that shows how to use Trap, the unimplemented Off command and the Err$ function to execute a perfectly functioning subroutine, all without the use of a single Goto or GoSub! Give it a try, it works remarkably well.

```
Ø REM ILLEGAL C-128 1NSTRUCTION TRAPS - DA
  RYL L. KNOWLES                    :REM*136
1Ø TRAP 5ØØØ                        :REM*136
2Ø PRINT"TESTING UNIMPLEMENTED COMMAND 'OF
  F' ":OFF                          :REM*1Ø7
3Ø PRINT"THIS IS THE MAIN PROGRAM IN LINE
  3Ø!"                              :REM*229
4Ø END                              :REM*168
5ØØØ REM ERROR TRAP                 :REM*191
5Ø1Ø PRINT ERR$(ERR)" IN LINE";EL:PRINT:HE
    LP                              :REM*82
5Ø2Ø PRINT"THIS IS THE TRAP HANDLER IN LIN
    ES 5ØØØ - 5Ø3Ø"                 :REM*151
5Ø3Ø RESUME NEXT                    :REM*149
```

—DARYL L. KNOWLES, JR., GREENVILLE, TX

$56D CURING NON-RANDOM RND NUMBERS

Even novice programmers quickly realize that the C-64's RND function does not return a series of truly random numbers. 64 Non-Random RND uses the random number generator of voice 3 of the SID sound chip to enhance the RND function. Run my program in conjunction with any program that uses RND and the result is truly random numbers.

For reference purposes, note that run-stop/restore does not deactivate my utility. Also, voice 3 will not function properly when 64 Non-Random RND is activated.

```
Ø REM 64 CURE FOR NON-RANDOM RND - DENNIS
  CULLEY                            :REM*243
1Ø FOR T= 679 TO 716:READ D: CK=CK+D:POKE
  T,D:NEXT                          :REM*5
2Ø IF CK <> 52Ø6 THENPRINT"ERROR IN DATA..
  .":END                            :REM*161
3Ø CK=Ø:FOR T= 828 TO 883:READ D: CK=CK+D:
  POKE T,D:NEXT                     :REM*24Ø
4Ø IF CK <> 7678 THENPRINT"ERROR IN DATA..
  .":END                            :REM*43
5Ø SYS 828                          :REM*18Ø
6Ø DATA 165,1,41,254,133,1,76,Ø,Ø,169,255,
  141,14,212,141,15,212,169,128     :REM*151
7Ø DATA 141,18,212,162,4,173,27,212,149,97
  ,234,234,234,2Ø2,2Ø8,245,76       :REM*51
8Ø DATA 227,224,173,2,3,141,174,2,173,3,3,
  141,175,2,16Ø,Ø,132,251,169       :REM*53
9Ø DATA 16Ø,133,252,177,251,145,251,2ØØ,2Ø
  8,249,23Ø,252,165,252,2Ø1,192     :REM*211
1ØØ DATA 2Ø8,241,169,176,141,96,16Ø,169,2,
    141,97,16Ø,169,167,141,2,3,169  :REM*84
11Ø DATA 2,141,3,3,96               :REM*121
```

—DENNIS CULLEY, WEST CHICAGO, IL

$56E LEFT/RIGHT SCREEN CLEAR 64

The next time you write a C-64 program, try incorporating Left/Right Screen Clear 64 into it. After typing in, saving and running this machine language routine, it resides in memory at location 49152. Then, entering SYS 49152 in either Program or Direct mode clears the entire screen from the center in a left/right sweeping motion.

```
Ø REM LEFT-RIGHT SCREEN CLEAR 64 - JEFFREY
  PANICI                            :REM*82
1Ø FORX=49152TO49152+1Ø7:READD:POKEX,D:C=C
  +D:NEXT                           :REM*229
2Ø IFC<>17Ø61THENPRINT"ERROR!!!":END
                                    :REM*58
3Ø DATA 169,2Ø,133,25Ø,169,Ø,162,4,16Ø,216
  ,133,251,133,253,134,252,132      :REM*49
4Ø DATA 254,162,24,16Ø,38,177,251,2ØØ,145,
  251,136,177,253,2ØØ,145,253,136   :REM*8Ø
5Ø DATA 136,192,2Ø,176,239,16Ø,2Ø,169,32,1
  45,251,16Ø,1,177,251,136,145      :REM*238 ►
```

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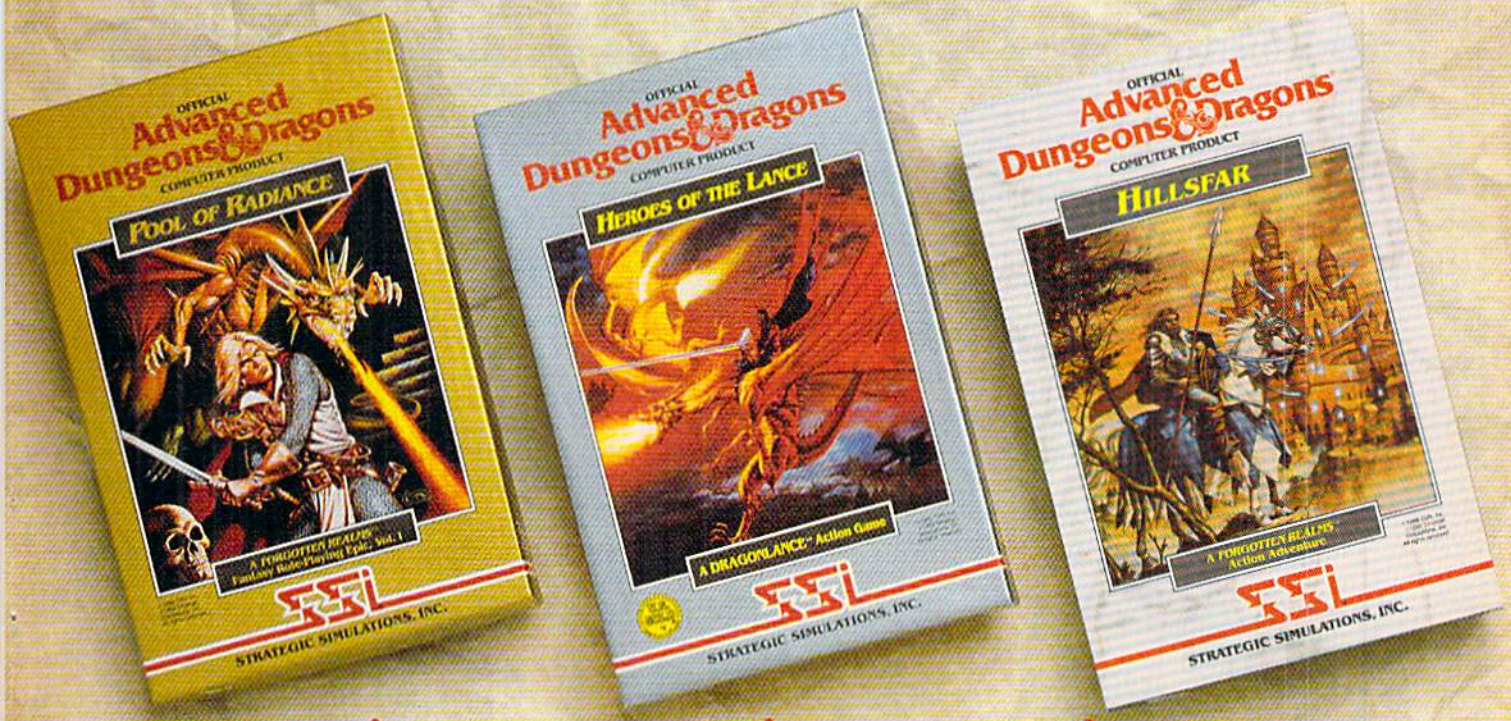

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```
6Ø DATA 251,2ØØ,177,253,136,145,253,2ØØ,2Ø
   Ø,192,21,144,239,16Ø,19,169,32 :REM*2Ø8
7Ø DATA 145,251,165,251,24,1Ø5,4Ø,133,251,
   144,2,23Ø,252,165,253,24,1Ø5,4Ø:REM*163
8Ø DATA 133,253,144,2,23Ø,254,2Ø2,16,181,1
   6Ø,1Ø,2Ø2,2Ø8,253,136,2Ø8,25Ø  :REM*126
9Ø DATA 198,25Ø,2Ø8,153,96          :REM*6Ø
1ØØ SYS49152                        :REM*11
```

—JEFFREY D. PANICI, SANDWICH, IL

$56F WHIRLPOOL SCREEN CLEAR 64/128

What sets Whirlpool Screen Clear 64/128 apart from other screen-clearing routines is that it not only works in C-64 mode, but also in 40-Column C-128 mode. It works by starting at the center of the screen and clearing characters in a counter-clockwise motion, finally ending at the home screen position.

```
Ø REM WHIRLPOOL SCREEN CLEAR 64/128 - JERR
  Y DICKSON                         :REM*66
1Ø PRINT"{7 CRSR UPs}":FORT=1983TO2Ø23
                                    :REM*1Ø6
2Ø A=1483:B=1:POKE1484,32           :REM*239
3Ø FORT=ATOA+(4Ø*B)STEP4Ø:POKET,32:NEXT:A=
   A+(4Ø*B):FORT=ATOA+B:POKET,32:NEXT
                                    :REM*191
4Ø B=B+1:A=A+B:IF(A-(4Ø*B))<1Ø24THEN7Ø
                                    :REM*61
5Ø FORT=ATOA-(4Ø*B)STEP-4Ø:POKET,32:NEXT:A
   =A-(4Ø*B):B=B+1                  :REM*8
6Ø FORT=ATOA-BSTEP-1:POKET,32:NEXT:A=A-B:G
   OTO3Ø                            :REM*2Ø1
7Ø A=2Ø16:B=1991:FORT=1992TO2Ø15:POKET,32:
   NEXT                             :REM*26
8Ø FORT=ATOA-(23*4Ø)STEP-4Ø:POKET,32:NEXT:
   POKET,32:FORT=B-(24*4Ø)TOBSTEP4Ø
                                    :REM*122
9Ø POKET,32:NEXT:A=A+1:B=B-1:IFA>2Ø23THENP
   RINTCHR$(19):END                 :REM*193
1ØØ GOTO8Ø                          :REM*236
```

—JERRY DICKSON, SANDWICH, IL

$570 ULTIMATE C-64 GET CURSOR

Since the first C-64 rolled off the assembly line, routines have been written that give a cursor to Basic 2.0's Get statement. My Get routine, the Ultimate C-64 Get Cursor, provides more than a mere cursor—it's an *animated* custom character!

You can modify the routine for use in your own programs, provided you don't change the Data statements at the end. You may renumber them, however. You can also alter the speed of the animation by setting the variable C to any value between 0 and 255.

```
Ø REM ULTIMATE 64 GET CURSOR - JERRY DICKS
  ON                                :REM*47
1Ø CLR:RESTORE:POKE5328Ø,6:POKE53281,Ø
                                    :REM*226
2Ø POKE56334,.:POKE1,51:POKE781,9:POKE782,
   .:POKE9Ø,.:POKE91,216:POKE88,.   :REM*51
3Ø POKE89,64:SYS41964:POKE1,55:POKE56334,1
   :POKE54272,216:POKE53272,3Ø      :REM*215
4Ø READA:IFA=-1THENPOKE53272,31:GOTO6Ø
                                    :REM*137
5Ø FORC=.TO7:READD:POKE14336+A*8+C,D:NEXT:
   GOTO4Ø                           :REM*137
6Ø C=45:PRINT"{SHFT CLR}{CRSR DN}{CTRL 2}H
   OLD DOWN 1, 2, OR 3 TO CONTINUE ";
                                    :REM*12
7Ø GETA$:IFA$<>"1"AND A$<>"2"AND A$<>"3"TH
   EN GOSUB9Ø:GOTO7Ø                :REM*199
8Ø PRINT"{CRSR LF} ":END            :REM*3
9Ø PRINT"{CRSR LF}{SHFT Z}";:FORT=1TOC:NEX
   T:PRINT"{CRSR LF}{SHFT +}";:FORT=1TOC:N
   EXT:PRINT"{CRSR LF}{COMD -}";    :REM*21
1ØØ FORT=1TOC:NEXT:PRINT"{CRSR LF}{SHFT -}
    ";:FORT=1TOC:NEXT:PRINT"{CRSR LF}{COMD
     -}";:FORT=1TOC:NEXT            :REM*67
11Ø PRINT"{CRSR LF}{SHFT +}";:FORT=1TOC:NE
   XT:RETURN                        :REM*23
12Ø DATA9Ø,255,129,129,129,129,129,129,255
                                    :REM*15
13Ø DATA91,,126,66,66,66,66,126,    :REM*78
14Ø DATA92,,,6Ø,36,36,6Ø,,          :REM*184
15Ø DATA93,,,,24,24,,,,-1           :REM*37
```

—JERRY DICKSON, SANDWICH, IL ■

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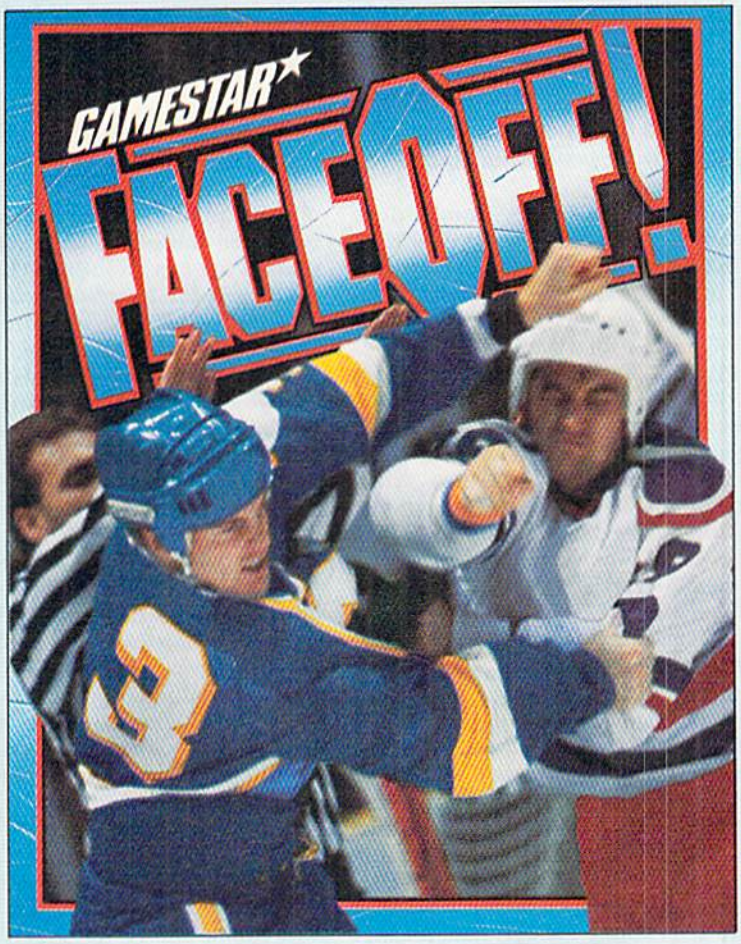

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NEWS AND NEW PRODUCTS

RUN reports on the World of Commodore show; two games contests are announced; and new product releases are surveyed.

By HAROLD R. BJORNSEN

RUNNING COMMENTS ON THE WORLD OF COMMODORE SHOW

VALLEY FORGE, PA—Commodore Business Machines held its World of Commodore show last September 22–24, and *RUN* solicited comments from some of its authors who attended the show. Here's what they said.

Michael Cavanaugh—Two images stood out in this reviewer's mind: "One is of a gentleman who complained that he had gone to every booth in the show in an attempt to buy a 128 or 128D, but was unable to find one. Another is of Commodore showing off their MS-DOS-based Colt machines, with no one at the show carrying any MS-DOS-compatible software."

The Creative Micro Designs booth was the saving grace for Cavanaugh. Curiosity there centered on the prototypes of a Commodore-compatible **hard drive** (available with either 20- or 40-megabyte storage capacity for under $600) and a power-backed interface for C-64/128 REUs, called **RAMLink**. Said Cavanaugh, "While CMD is best known for its JiffyDOS disk drive enhancements, the implications of this new hardware are exciting enough that, for me, the CMD booth alone was worth the ten dollar admission price."

Loren Lovhaug—For this writer, the "excitement generated at the World of Commodore show was on the 8-bit side." Although there were "fewer developers for the show on the whole" than in the past, this year a "larger percentage" were C-64/128-dedicated developers.

Besides the CMD products mentioned above, Lovhaug felt that the introduction of Brown Boxes' (26 Concord Rd., Bedford, MA 01730) **QBB-B** ($119 plus $3 s/h) was significant for Commodore 8-bit fans. The 64K battery-backed cartridge lets owners of the 64K Quick Brown Box upgrade to 128K, and it keeps data intact even after the computer is turned off. The QBB-B is identical in size to the QBB and is designed to run on an extender card.

Lou Wallace—*RUN*'s contributing editor deemed a few yet-to-be-released 8-bit software programs high on his list of "hot" products. He mentioned Rick Kane's **80-column color interlace program** (written in Basic 8), Bill Coleman's C-128 **graphic interface terminal program** for GEnie, and Tom Brown's **128 desktop publishing** package.

RUN reporters also noted other software/hardware manufacturers and proponents of the Commodore 8-bit line. Representatives from Abacus, Xetec, Berkeley Softworks, Busy Bee and Q-Link were busy displaying and selling products.

Last, but not least, Commodore's presence was enhanced by a large booth (featuring mostly Amigas and PCs) and the appearance of Lloyd Mahaffey (marketing vice president) and Howard Diamond (education director).

One thing's certain—this World of Commodore show illustrated 64 and 128 support at the "grass roots" level!

INSTANT WINNERS

SAN JOSE, CA—A trip for four to Super Bowl XXIV in the New Orleans Superdome will be the grand prize in a new Data East **MVP Sports sweepstakes** giveaway. It will launch the company's newest software title, ABC's Monday Night Football. Sports and computer enthusiasts can also win hundreds of other prizes. To enter, cut out the game piece from the Data East ad and compare it with the prize symbol on the back of the ABC's Monday Night Football game package at any participating software dealer. If they match, it's an instant winner. All consumers may also mail in their game piece for a second-chance drawing with a cash award of $5000. The sweepstakes deadline is January 10, 1990.

A GREAT CHRISTMAS GIFT

NEW YORK—The large-format book, ***Visualization: The Second Computer Revolution***, highlights how computer visualization is fundamentally changing the way we think. Used for solving complex problems and developing creative ideas, computer visualization is emerging as a unified discipline that is revolutionizing every single field that utilizes images—from looking into the human body to exploring the universe.

For the general audience, the book brings together information on the array of technologies from all areas using computer imaging. The 256-page volume contains more than 200 illustrations, 142 in full color and many that are specially created computer image sequences and diagrams. $49.50. Harry N. Abrams, Inc., 100 Fifth Ave., New York, NY 10011.

Check Reader Service number 400.

OMEGA CYBERTANK CONTEST

LONDONDERRY, NH—Owners of the Omega cybertank design program can pit their most effective cybertank against the best from around the world in the **Omega Tournament**, a contest jointly sponsored by Origin (136-B Harvey Rd., Londonderry, NH 03053) and Computer Gaming World. The tournament challenges all gamers to show off their expertise, matching their design and programming skills against fellow gamers across the nation. Detailed information on tournament rules is included in every game. Entries will be accepted until January 31, 1990.

WRITTEN IN RED

BALLWIN, MO—**The New International Version Bible** text for the C-64 is now available with Landmark: The Computer Reference Bible. The NIV comes with footnotes, individual verse references and the words of Christ highlighted in red. It's available for $129.95 from P.A.V.Y. Software, PO Box 1584, Ballwin, MO 63022.

Check Reader Service number 403.

SEARCHING FOR THE RIGHT WORD

DECATUR, IN—S.O.G.W.A.P. Software (115 Bellmont Rd., Decatur, IN 46733)

has released **Bible Search** for the C-64 and C-128. It contains the full text of the King James Version of the New Testament, plus a complete Concordance. It features single and multiple word search and verse-display capabilities, with words found and the full text displayed in seconds. The text is complete with book, chapter and verse markings, upper- and lowercase characters, full punctuation, italics and the words of Christ in color. Printer output is also available. The King James Version is $25; The New International Version is $30.

Check Reader Service number 402.

BetterDOS

WILBRAHAM, MA—Creative Micro Designs (PO Box 789, Wilbraham, MA 01095) has updated **JiffyDOS**, a disk drive speed enhancement system, to version 6.0. Its new features include a built-in copier to back up files, an enhanced screen dump that automatically recognizes upper- and lowercase graphics, and a printer-output toggle that switches output between screen and printer. In addition, it redefines the C-64-mode function keys to suit your needs, supports RAM expansion units and RAMDOS, and is compatible with more software and hardware than the earlier version. It's priced at $59.95 for the C-64 system and $69.95 for the C-128 system.

Check Reader Service number 404.

Check It Out

TINLEY PARK, IL—**The Banker**, a menu-driven checkbook program for the C-128, features an edit file that allows you to add or modify information on the datafile; void, which allows you to remove an item during calculation; toggling between debit and credit screens; saving and loading files; a search file; and print options. Also included are the start-up utilities, which let you set up a personal security code, change your drive number, prepare a new data disk, initialize the main data file, add an autoboot sector, and change the hardware configuration. The Banker is available for $19.95 plus $3 s/h. EasyLife Software Systems, PO Box 776, Tinley Park, IL 60477.

Check Reader Service number 405.

25 Percent Faster

NEW YORK—Star Micronics (200 Park Ave., Suite 3510, New York, NY 10166) has boosted the speed of its 9-wire dot matrix printer by 25 percent with the introduction of the **NX-1000 II** multi-font. It offers near-letter-quality text at 45 characters per second and draft output at 180 cps, in 12 characters per inch. The printer features four internal fonts, a 4K buffer and paper parking, which allows users to feed single sheets without removing tractor-fed paper. It's available for $299.

Check Reader Service number 401.

Star Micronics' new multi-font printer boosts speed by 25 percent.

Three for AD&D Fanatics

SUNNYVALE, CA—Strategic Simulations (675 Almanor Ave., Sunnyvale, CA 94086) has released three new packages for Advanced Dungeons & Dragons fanatics and the C-64.

In **Dragons of Flame**, your quest is to rescue slaves held by the ravaging Dragonarmies in the foul fortress of Pax Tharkas. You control up to ten Companions, each with a different, specialized skill. Of course, you'll be battling monsters of all sorts before trying to crack the impenetrable fortress. $29.95.

War of the Lance is the first AD&D wargame where you move entire armies when the forces of Whitestone clash against the evil Highlord Dragon armies to gain absolute rule over all Ansalon in the Dragonlance game world of Krynn. At the same time, you can also send groups of hero characters on quests to discover magic items to help defeat the enemy. $39.95.

Dungeon Masters Assistant, Volume II: Characters and Treasures is a utility program designed to help you generate, in a few moments, characters and treasures for AD&D campaigns. $29.95.

Check Reader Service number 407.

RUNning Math

BIG SPRING, TX—**Math Football: Rounding**, an educational game for the C-64, combines football action with rounding drill and includes a management system for teachers. For one or two players, students have a choice of four playing levels: High School, College, Pro or Super Bowl. On each play, students may choose a running play (easy problem), short pass (medium problem), long pass (hard problem) or punt. Correct answers result in yardage gained, first downs, touchdowns and extra points after a touchdown. It's available from Gamco (PO Box 1911, Big Spring, TX 79721) for $44.95.

Check Reader Service number 408.

Let It Ride

COSTA MESA, CA—Up to four players may compete in **Omni-Play Horse Racing**, a new C-64 sports strategy game from SportTime (3187-G Airway Ave., Costa Mesa, CA 92626). Horse racing enthusiasts and strategy game players can define Tournament rules, choose from 128 horses (includes detailed past performances of the last ten race results for every horse) to compete in each race and choose jockeys from complete profiles. Track conditions can be varied. A complete horse racing simulation allows you to play and compete in a Handicapping Tournament and purchase tips from classy competitors and shady characters. You can get it at the pari-mutuel windows for $34.95.

Check Reader Service number 410.

Learn the Basic 8

KUTZTOWN, PA—Free Spirit Software (PO Box 128, Kutztown, PA 19530) has published ***How To Get the Most Out of Basic 8*** for the C-128 programming environment. The book provides explanations of many Basic 8 concepts, along with examples and demos. Chapters cover graphics modes, Rylander 3-D solids, user input and utilities. It also covers creating animations with Basic 8. The 80-page book costs $19.95.

Check Reader Service number 411. ■

MAIL RUN

Searching for needlework-design software and educational software, and discovering an undocumented Commodore phenomenon.

A QUICKER FILE PICKER-UPPER

In "The Nuts and Bolts of GEOS to RUN Paint" (*RUN*, November 1989, p. 39), author Tim Walsh described an elaborate process that converts a geoPaint file to RUN Paint with a "minimum of file fiddling." His way required a computer with a reset switch, a feature not included on the C-64.

There's another and quicker way to accomplish this without requiring a reset switch or exiting GEOS.

Joe Buckley's PaintView II on *RUN*'s GEOS Power Pak (also available for downloading from *RUN*'s Online Library on QuantumLink) allows you to view and scroll a geoPaint document in a full 320-by-200-pixel screen area without using geoPaint. And, after positioning a part of the screen you want to save, you simply press the S key and a dialog box pops up requesting you to type in a name to save as a Doodle! file. Renaming the prefix to RPH., so that RUN Paint will recognize the file, is easier to do under GEOS than with normal Commodore DOS.

—PAUL A. HUGHES (SYSOP PH)
QUANTUMLINK GRAPHIC
SUPPORT GROUP
CANTON, MA

AN UNDOCUMENTED PHENOMENON

I seem to have run across an undocumented Commodore phenomenon. For the last month or so, I've advertised heavily in four different area publications for a used C-128 system. In light of Commodore's recent customer support move of discontinuing this system, I need one for a backup. The problem is that I have had absolutely no response to my ad. I know for a fact that, locally, Sears sold hundreds of C-128s and 128Ds, and, according to a salesperson, stopped carrying them only because of Commodore's infamous lack of support.

Around here at least, folks just aren't willing to part with their "poor, old, mostly useless" C-128s. What do you make of this?

—NORMAN MORRISON
OXFORD, AL

It must mean that those Commodore 128s are more useful than you or we—or Commodore—imagined.

—EDITORS

SILVER THREADS AND GOLDEN NEEDLES

I'm searching for needlework-designing software that can make large graphs and symbols for embroidery (DMC) colors. I've been designing charts freehand for years, but each chart can take months to complete. Does anyone know of such a product for the C-64?

—KATHLEEN M. FOLEY
NORTH ATTLEBORO, MA

We are unaware of such a program. However, our readers are very good about helping fellow RUN *subscribers, so we may have an answer for you before too long.*

—EDITORS

THANK YOU, COMMODORE!

I've been passively watching a ton of verbiage flow regarding what a "nasty" company Commodore is for not doing more for its customers.

Like many *RUN* readers, I've been using Commodore computers for a long time, and I've followed the Commodore-specific magazines such as *RUN* since the early days. I have always felt that the enjoyment my computers brought me was an absolute bargain, considering the competition's prices.

Commodore taught me that there was a fantastic world of computing waiting to be explored, and as I expanded my knowledge of how computers operated, Commodore was always there with the next generation of computer to permit me to step up and accomplish even more. There's plenty available in productivity and entertainment software, and most of our differing needs and desires can be attended to.

I recently had the opportunity to change over to an IBM system. I spent a great deal of time comparing what IBM would do for me that a 128D could not. I asked myself over and over what I wanted to achieve with any computer system, and Commodore's 128D filled the bill each time.

Thank you, Commodore, for producing inexpensive and highly effective computer systems for the average consumer. I understand that the profit motive is the driving force behind any company's thrust into a market, and it's this motive that has greatly benefitted the customer.

—MIKE MCCAFFREY
BRUSSELS, BELGIUM

EDUCATIONAL SUPPORT

As an elementary school teacher, I get a little angry every time I read letters such as the one from Dorothy Hemme (see "A Lone Star For Commodore," Mail RUN, July 1989), who says there's no educational support from Commodore. While this may be true of Commodore itself, there is plenty of educational software for the C-64. My problem isn't a dearth of software; it's getting enough money budgeted for the software our school needs.

I'm totally sold on the C-64 for our students. We've had no repairs, no problems and no additional expenses. I don't see who can ask for anything more than the quality, versatility and economy of Commodore computers.

—JEANNE YOUELL
WENDEN, AZ

See last October's Software Gallery for reviews of educational programs and a review of a catalog containing reviews and ratings of educational software.

—EDITORS ■

Send your letters to Mail RUN, 80 Elm St., Peterborough, NH 03458. Each letter must include the writer's name and complete address. RUN *reserves the right to edit letters for style, clarity and space.*

LOST DUTCHMAN MINE™

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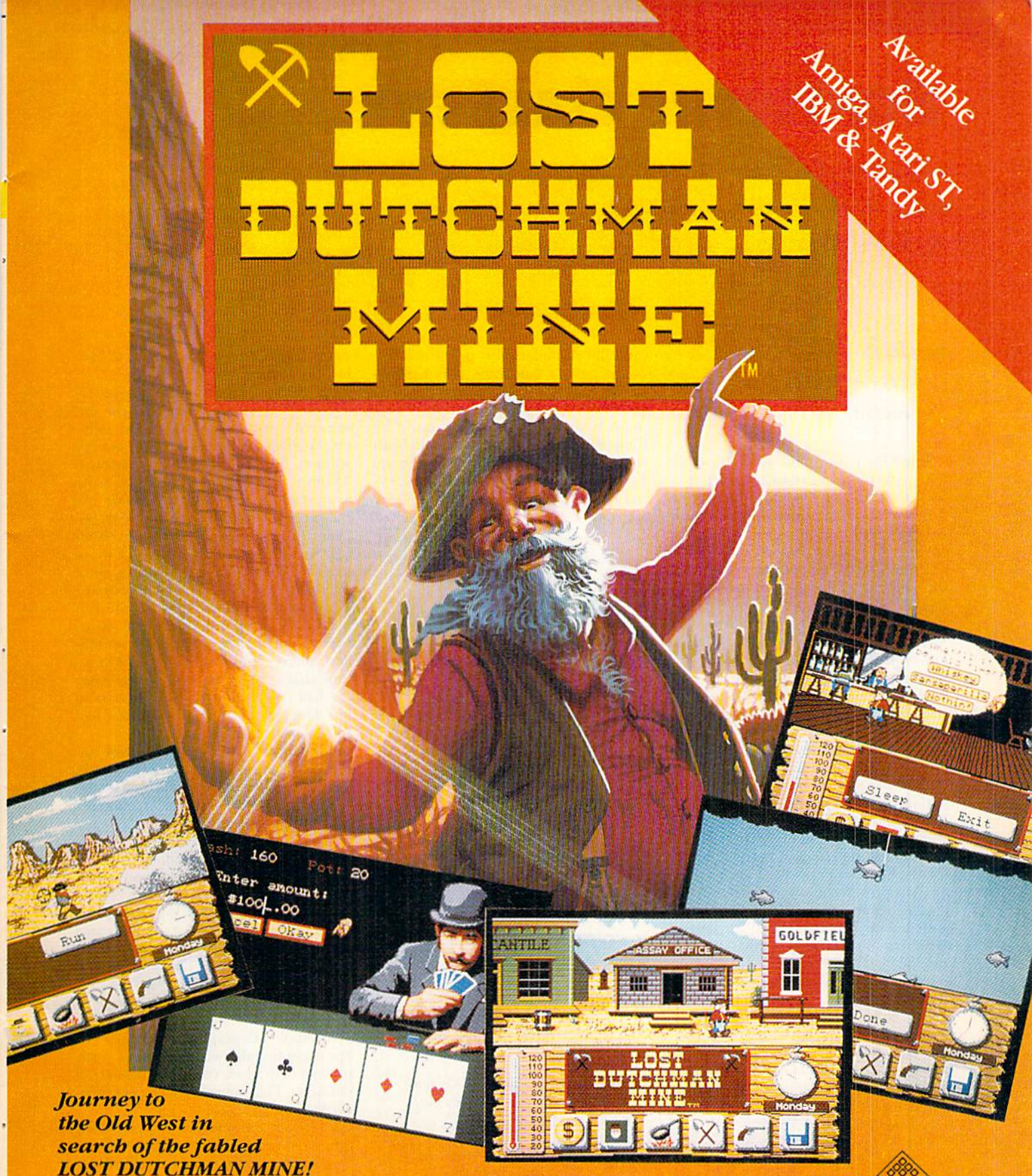

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SOFTWARE GALLERY

Let arcade fun, fantasy role-playing adventure and flight-simulating action help you usher in the '90s!

By BETH S. JALA

FIRE KING ..... A–

Good Guy's Mission: Exterminate the Big, Bad Beast

Fire King is one of the most enjoyable C-64 role-playing games I've seen in a long time. There's nothing essentially different about the story, but it's so well programmed that it's just a pleasure to play.

For as long as anyone can remember, the harmony of the land has been maintained by the four Mages of the elements: Air, Fire, Water and Earth. The Fire Mage, who is king, is suddenly killed by a magical beast. The Air Mage, who returned to tell the tale, is seriously wounded, the Water Mage can't be found, and the Earth Mage has gone insane.

The evil beast was also killed, but another one inhabits the catacombs, and from time to time comes to the surface to snack on the townsfolk. The Mayor has already sent one brave adventurer to slay the creature. On the assumption he has also become lunch for the beast, it's now your turn.

To begin your quest, you choose from among six intrepid adventurers, each with his or her own set of attributes. Your first job is to obtain provisions and get the "lay of the land."

When you're ready, you can head to the town square. There you'll find an arms store, a shop, a temple and the Thieves Guild. Along with things that you'll need in your quest, each spot also has its own perils. There are training rooms behind the Thieves Guild where you can get some fighting experience—you'll need the practice.

Fire King's graphics are particularly nice, and the scrolling is extremely smooth. Disk accesses are quite speedy, enhancing the flow of the game, and the sound is also well done.

The game uses a joystick and function keys. One thing I find distracting is the status symbols; it's easy to lose track of what I have. Players are also quite limited in what they can carry, but choosing carefully eliminates this problem.

The game's landscape is not gigantic, but I suspect the authors opted to concentrate on quality graphics and smooth programming instead. Fire King will give you hours of fun with very little hassle. *(Strategic Studies Group; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/ $29.95.)*

—ART LEWIS KIMBALL
TUSCOLA, IL

ARKANOID II: THE REVENGE OF DOH ..... A–

Bashing Bricks Becomes Bigger and Bolder

It was nearly two years ago when Arkanoid revitalized the ball-and-brick game genre for the C-64. Now Taito has released a sequel that brings still more delights to those who love to "follow the bouncing ball."

As in the original, the setting of Arkanoid II is outer space, and the on-screen bar you control represents an interplanetary craft that deflects energy spheres. Each of the sequel's 67 levels—44 more than in the first program—has a unique pattern of blocks. Some are indestructible, and some continually appear and disappear, while others disintegrate after a ball hits them one or more times. You conquer a level when all of the third type of bricks are eliminated.

You start with four spheres and can obtain more. Throughout the game, malevolent aliens wander about and divert spheres from their paths. The more time that is spent on a level, the faster the ball travels and the harder it is to hit. The game ends when the last ball slips past the bar.

Arkanoid II offers three control options: keyboard, joystick and mouse. The latter device is especially well suited for the precise horizontal movements that this game requires.

When certain bricks disappear, a labeled capsule is released. If the bar catches it, you temporarily receive one of 14 different "powers," twice as many as in the first game. Among these powers are the creation of a second bar and MEGA energy balls that slice through every kind of brick. The necessity of learning how to effectively use the capsules adds a bit of mental challenge to the contest.

Arkanoid II's graphics and animation are exceptionally well done, and each pattern of bricks is colorful and sharply defined. The sound effects are also excellent.

However, the software could've been improved in one minor respect. Taito should have indicated more clearly on the box that the C-64 version of the game does not include a construction set.

Also, potential purchasers should realize that the program is very demanding. For example, it takes a great deal of skill to precisely guide a ball to the last few target bricks that end up remaining on each level. In addition, the ►

REPORT CARD

A Superb!
An exceptional program that outshines all others.

B Good.
One of the better programs available in its category. A worthy addition to your software library.

C Average.
Lives up to its billing. No major hassles or disappointments here.

D Poor.
This program has some problems. There are better on the market.

E Failure.
Many problems; should be deep-sixed!

ALTERED BEAST

TRANSFORMATION IS THE ULTIMATE POWER

Distributed by Electronic Arts.™ Copyright 1989 Sega Enterprises, Ltd.
Circle 147 on Reader Service card.

software was programmed so that every new game begins on the first screen; as a result, some players will never reach the final level.

But to those who are up to the challenge, Arkanoid II can be extremely entertaining. It is that rare sequel that is markedly superior to a very fine original. *(Taito Software, Inc., 267 West Esplanade, North Vancouver, British Columbia, Canada V7M 1A5. C-64/$29.95.)*

—WALT LATOCHA
OAK PARK, IL

SPIDER-MAN AND CAPTAIN AMERICA IN DR. DOOM'S REVENGE ..... B

Here They Are,
To Save the Day!

The line between comics and computer games grows thinner every day—everything from straight licensing deals to interactive comics to games that have comic book instructions. There are even computer games that have crossed the line the other way to become comic books. Still, Dr. Doom's Revenge has taken a new twist with this genre.

Combining the look of a comic book with the feel of an arcade game, Dr. Doom's Revenge not only packs a (Marvel-produced) comic book inside, but actually has a plot that advances via on-screen panels. The story revolves around the evil Dr. Doom, ruler of the kingdom Latveria, who has decided to once again make his bid for world power (through the use of his stolen intercontinental ballistic missile). It's up to Spider-Man and Captain America to stop him, which won't be an easy task because Doom has assembled ten of the toughest villains in the world to augment his already formidable army of robot guards.

You advance through the strip portion of the adventure, moving from panel to panel at your own pace, by manipulating a pointer. When an action scene occurs, the pointer stops, and you shift to the arcade phase. You assume the personas, first of "Spidey," then of "Cap," as they sling web and shield at their various attackers.

The software features a Save function that lets you pick up from wherever you left off in a previous game. My advice is to execute this option prior to every battle. Also, when initially confronting each foe, if your first impulse is to stand toe-to-toe to slug it out, don't. Check out the background of each character, as there are some heavy hitters in the group—

CAP ARRIVES AT DR. DOOM'S CASTLE
A ROBOT GUARDS THE ENTRANCE!
THERE WILL BE MORE SURPRISES BEFORE I MEET DOOM!
KAKOOM!
A BURST OF FIRE ENTERS THE ROOM!
FIREBALLS?!

A look at the comic book-like panels in Dr. Doom's Revenge.

yes, even some who are physically much stronger than our heroes. It's important to remember that Cap is a superb athlete in top physical shape, while Spidey is quite strong, very nimble and can cling to walls. As offensive weapons, Cap has his shield and Spidey his webbing.

And, getting through Doom's castle is really only half the battle, as you still have not only to go up against Doom himself, but to disarm his missile as well. *(Paragon Software; distributed by Medalist International, 180 Lakefront Drive, Hunt Valley, MD 21030. C-64/$39.95.)*

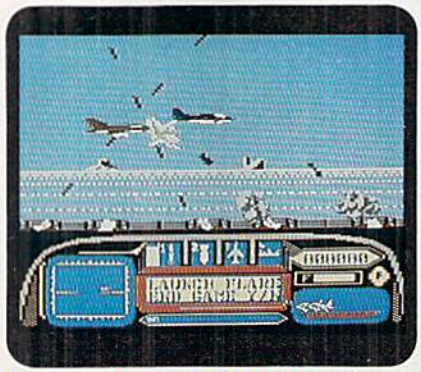
—BOB SODARO
FAIRFIELD, CT

HARRIER 7 ..... C+

Good Luck, Pilot,
You're Going To Need It!

Just when you thought it was safe to get back into the cockpit, along comes Harrier 7, a flight simulation/combat program. Harrier 7 is not a "you-are-there," first-person type of game; rather, the action is viewed from the sidelines. From a mechanical point of view, control—via joystick and a handful of keys—is extremely easy.

You begin with three Harrier aircraft.



Here's your view of the battle area and control panel in Harrier 7.

Your mission is to jet across enemy territory and destroy their missile silos, heavily fortified bases and MIG aircraft. It'll take practice, daring and lots of luck before you can emerge the victor.

From the moment you gently lift off the aircraft carrier, you are besieged by enemy anti-aircraft shells, Exocet missiles and determined MIGs. Before you can defend yourself against these nasties, you have to learn to control your overly sensitive aircraft. Until you become adept at joystick maneuvers, you find your actions tend to over-exaggerate the aircraft's performance—usually resulting in "pilot-induced incidental terra firma osculation" (i.e., you crash).

The graphics screen is a split view. It consists of the window to the battle area and a stark control panel that displays simplistic radar information, fuel gauge, weapon selection and score area. As your aircraft travels either left or right, the graphics scroll smoothly with it, over sea and land. Although they may not win any awards, the graphics are handsome and well suited to this type of game.

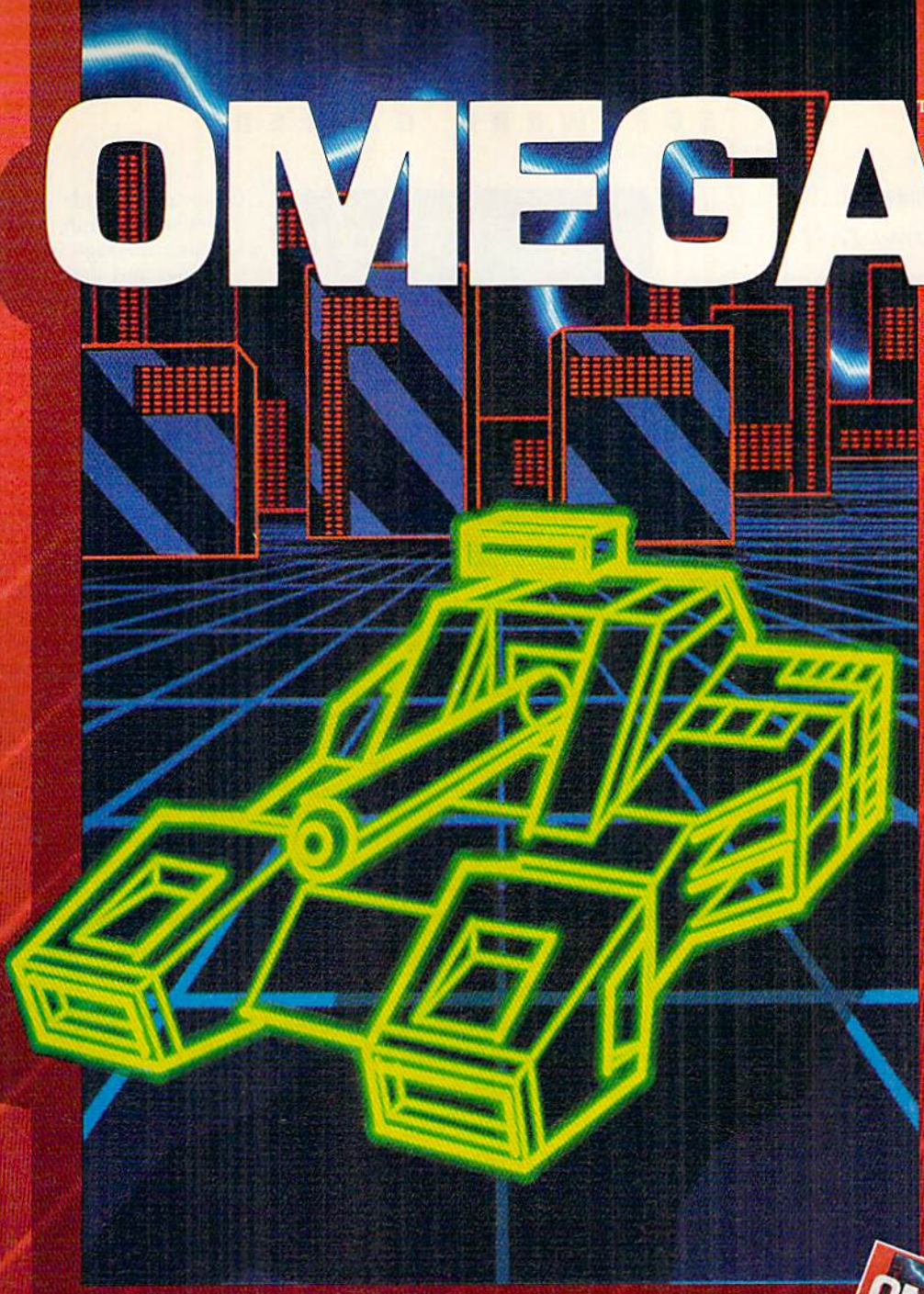
While the action is certainly fast and furious, it's almost impossible to defend yourself from all the hazards this program offers. In a short period of time, the screen becomes very busy, and you may have initial difficulty in identifying your targets. Especially harrowing are MIG dogfights, where enemy aircraft seem to pop out of nowhere. Since the MIGs don't stay in your field of vision long enough for you to get off a clean shot, it becomes a simple matter of persistence and luck.

Documentation comes in the form of a single cardboard insert, which is just as well—you need little in the way of instructions once you load Harrier 7. More games should have the same kind of "boot and go" environment.

I slowly came to the conclusion that any criticism I aim at this software evolves from its lack of depth and staying power when compared to the bigger titles, which is unfair. If you're expecting beautifully detailed graphics, multiple playing levels and digitized explosions, look elsewhere. If, on the other hand, you're ready to hand over 15 dollars for an evening or two of entertainment (the price of two movie tickets and a large bucket of popcorn where I live), then give Harrier 7 a test flight. *(Avantage; distributed by Accolade, 550 S. Winchester Blvd., Suite 200, San Jose, CA 95128. C-64/$14.95.)*

—JOHN RYAN
BILOXI, MS ►

OMEGA™



Neural Cybertank Design and Simulation

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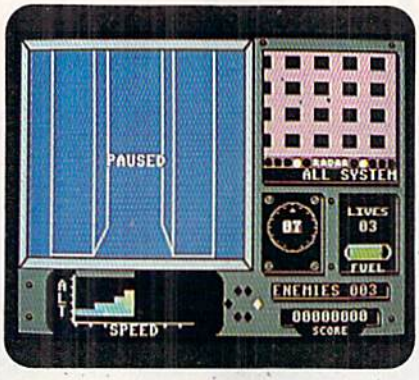
In 40 seek-and-destroy missions, Apache Strike pits you against progressively tougher opposition. Your primary objective in each tour of duty is to knock out the city's Strategic Defense Computers (SDCs), thus causing local rebel forces to collapse; your primary problem is dealing with swarms of enemy helicopters.

Granted, your AH-64 Apache is not exactly a "sitting duck." Rapid-fire cannons rip apart enemy choppers and tanks as if they were ripe melons, and just three well-placed missiles wipe out an SDC. High-tech instrumentation complements the speed, altitude and fuel indicators. To the right of your bulletproof windshield, radar locates enemy craft in the immediate vicinity. Distance to an SDC (in city blocks) and bearing are continuously updated.



The instrumentation in Apache Strike includes radar, fuel and speed displays.

Other aids include a count of remaining enemy aircraft and a 14-character scrolling message center that supplies warnings and status reports.

Like "old time" flight simulator packages, Apache Strike's forward view trades away detail for speed and perspective. Thus, while each city is merely a grid of soaring square columns, and enemy craft are barely recognizable, you do get something approaching the look of real-time flight in three dimensions. The game achieves the right "feel" through responsive controls and fast/slow/hover speed settings that supply ample maneuverability.

Flying the AH-64 is fun, but fighting with it exposes severe weaknesses. Since you lack any targeting aids (e.g., crosshairs), aiming your shots is largely a matter of pointing in the general direction of an enemy craft. In the heat of combat, you should be able to rely upon what you see. Yet, given poor vertical perspective rendition, the bar graph altimeter is your only indicator of distance from street level. Surprise crashes are a major hazard. ►

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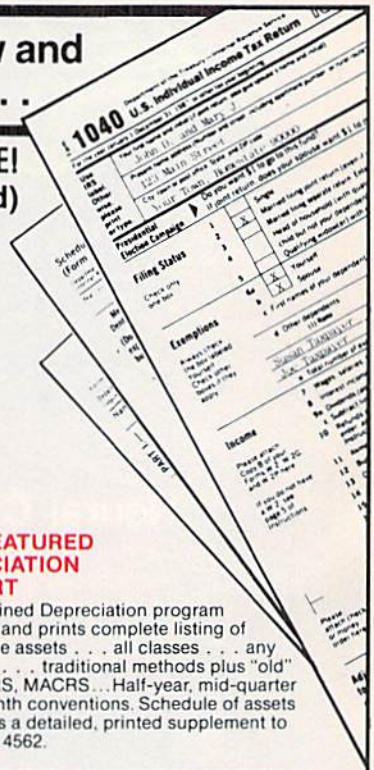

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With three lives allotted per mission, fuel boosts for each kill, an option to select starting level, fast restart and its 10-position, high-scores roster (maintained on disk), Apache Strike can easily draw you into multiple replays. However, be sure to see the program's help screen, *not* the manual, for correct key assignments. And, don't expect ace-class combat; do expect an engaging flight simulator challenge. *(Activision; distributed by Mediagenic, 3885 Bohannon Drive, Menlo Park, CA 94025. C-64/$14.95.)*

—JEFF HURLBURT
HOUSTON, TX

GAUNTLET II ..... C–

A Rerun Through Dungeons and Mazes

Gauntlet II, an arcade dungeon-game sequel, offers the usual maze-running fare for one or two players.

You must choose to play as one of four characters: Merlin, Thor, Thyra or Questor. Each hero is different from the others in regard to overall prowess, which is broken down into shooting ability, magical powers, physical dexterity and armor protection.

Your joystick makes your on-screen figure move in any direction. Pressing the joystick button causes your character to shoot bullets, or in the case of Questor, arrows. Contact with certain enemies also destroys them.

A potpourri of hobgoblins—ghosts, demons and sorcerers, to name a few—proliferate out of monster generators, so it's best to smash these spawning nests pronto! Each type of creature poses a different threat. Most of them wear you down by constantly bumping into you or throwing objects at your body.

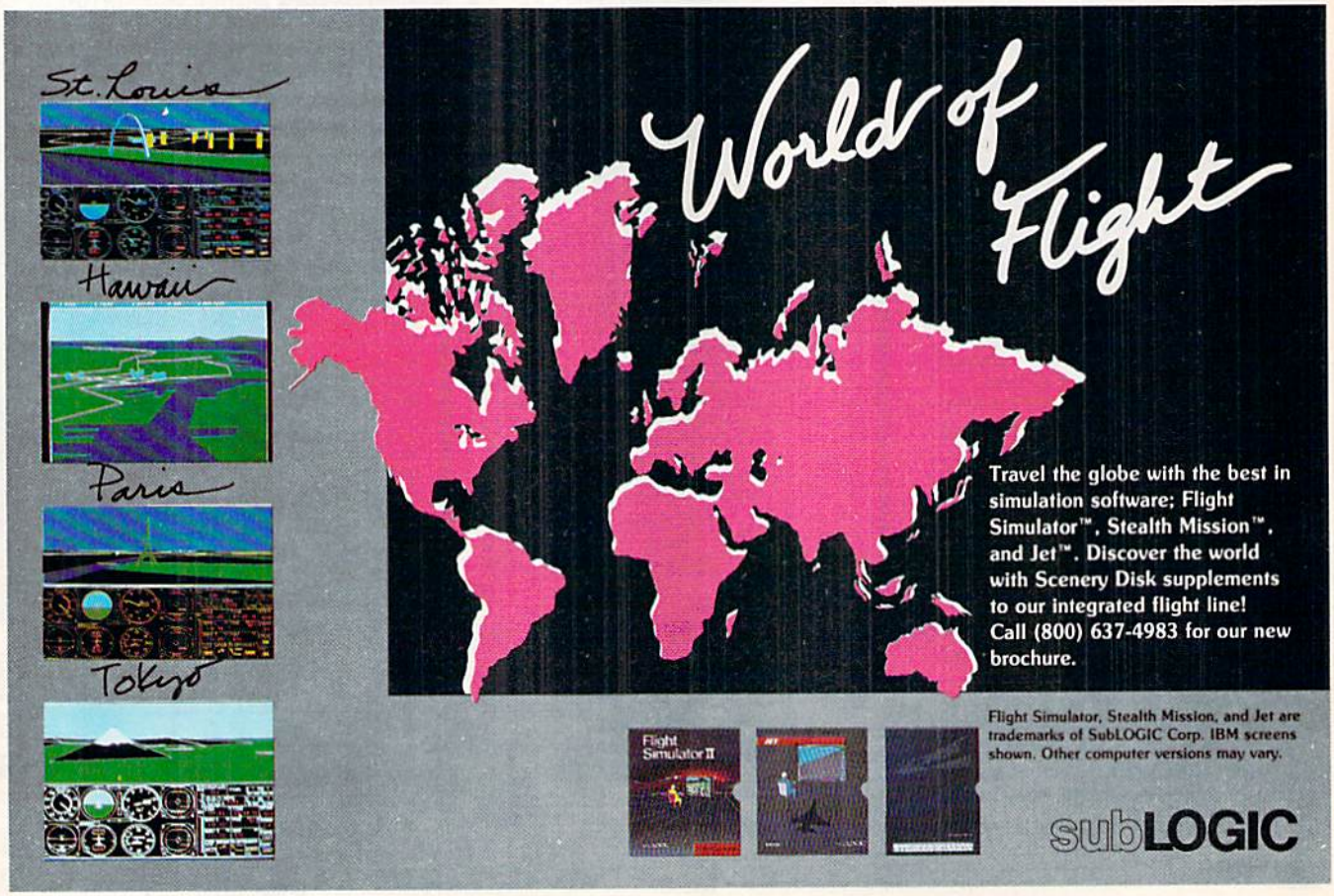
You can explore over 100 different mazes in this game and accomplish the usual dungeon-related tasks—finding secret amulets, imbibing magical potions, picking up keys, teleporting around, and so on. Of course, certain items confer upon you different gains, from increased vigor to temporary invisibility. A key, for example, might let you open a treasure chest and earn extra game points. Drinking health potions or eating food prolong your physical well-being, which is listed as points on the screen. Enemy battering, along with time, erode this score.

I could go on, but you might get the wrong impression, since a description of Gauntlet II's general features reads better than actually playing the game.

My complaints: The computer shows a profile image of your figure gliding in mid-air like a shadow over the ground, creating a point of view that's impossible, perspective-wise; the game's terrain is flat and featureless; your screen's overhead view reveals animated graphics too tiny to appreciate; and the basic routine follows the same old formula. It's like watching a television rerun.

While it may be a good entry-level game for beginners, Gauntlet II is one gauntlet you'll probably want to lay down rather than run. *(Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062. C-64/$29.95.)*

—JOHN DIPRETE
CRANSTON, RI ■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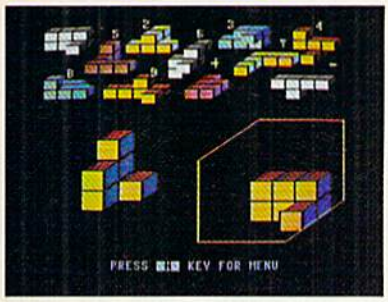
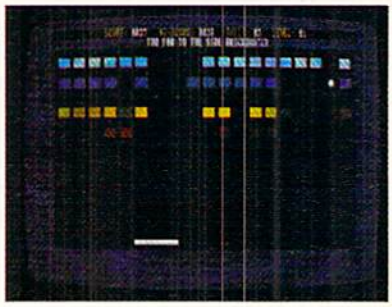
3 & 4. Think you qualify for MENSA membership? Then **CUBIX 2*** and **CUBIX 3*** are ready for the test!



But beware, these twin teasers share only their name—and their neural nastiness!

5. Meanwhile, back in the outer reaches of the universe, load up for a couple rounds of **DEATH QUADRANT**. The blast-happy lover of Asteroids in you will never be busier!

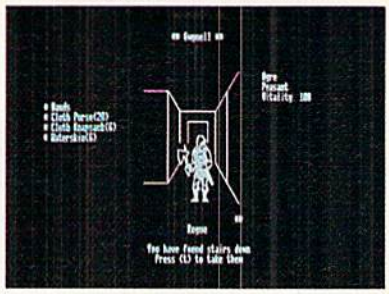
6. Remember what the good old days were like? Well, **BYE, BYE BRICK** reminds you of the bygone thrills of Breakout, but this time in 80-column color mode.



7. Get your trigger-finger ready for **NIGHTHAWK 128**, a delightful challenge that tests your driving and your shooting skills!

8. **GWYNELL** is a detailed 3-D maze adventure that takes you through level-upon-level of dungeon-danger.

There's always an encounter or an interesting twist just beyond the next door!



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In Search of Creativity Software

Last month, garbed in pith helmets and wielding machetes, we hacked our way into the jungle of Commodore software to search for programs that are useful, not just entertaining. Amidst the tangle of game titles, we discovered the Pyramid of Productivity, containing lots of programs both old and new. Now it's time to don our jungle garb again, to head out in search of creativity software—programs that can help you express and enjoy yourself in many ways. Are you ready?

Blazing a new trail is hard work, but eventually we spy an opening labeled Cavern of Creativity in the side of a hill. This is it! We duck our heads and step inside.

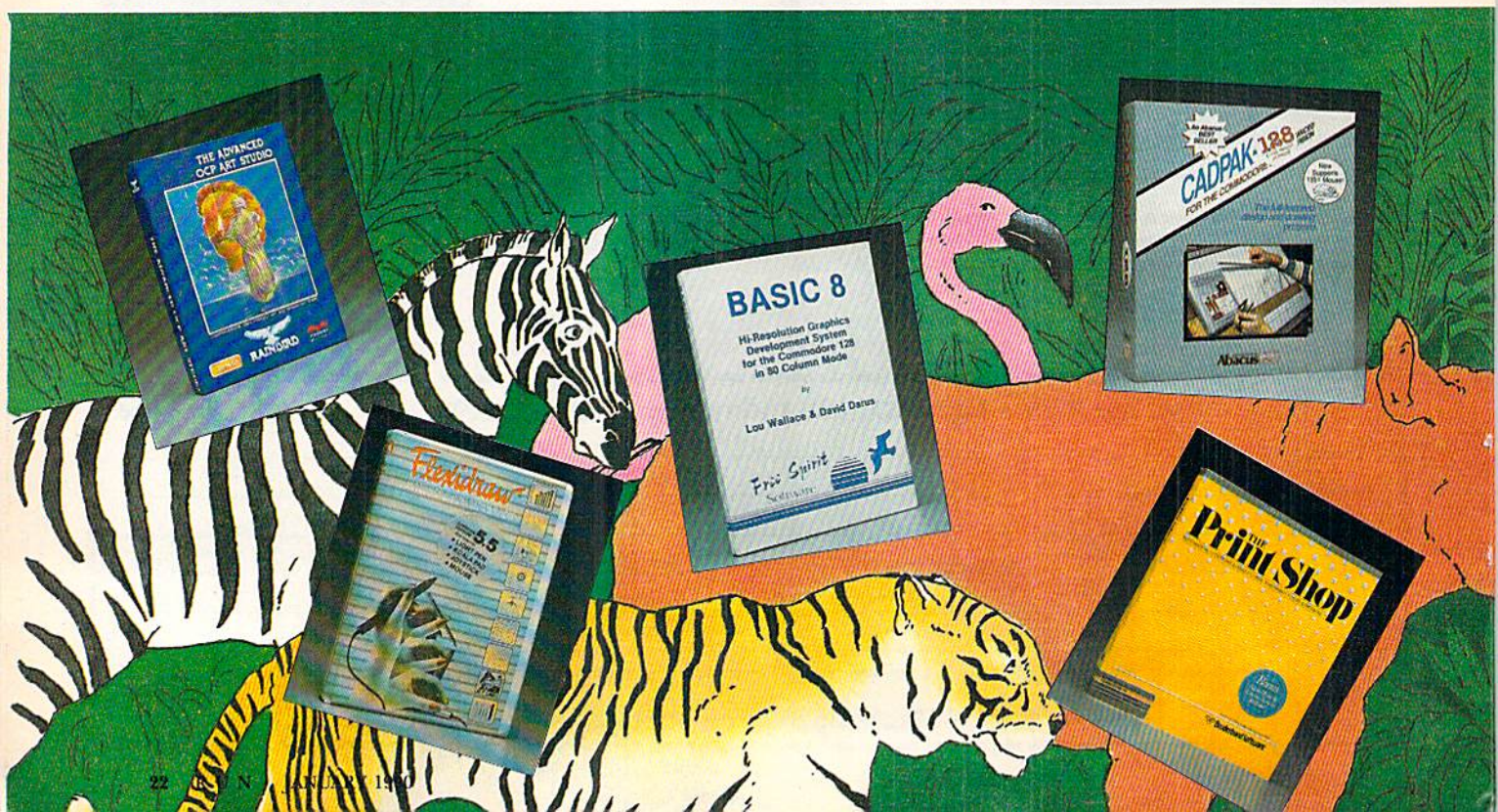
Graphics

Instantly, a palette of brilliant colors shimmers in our torchlight. We gasp in astonishment at the sparkling gems before us—a wealth of wondrous graphic arts programs. There is Rainbird's **The Advanced OCP Art Studio**, featuring windows, icons and pull-down menus, which shines as one of the finest color graphics programs for the C-64. And just beyond is **Doodle!**, a C-64 hi-res color drawing program from Crystal Rose; withstanding the test of time, it has established a standard for graphics formats.

Nearby perch Inkwell's **Flexidraw**, a hi-res drawing package for use with that company's lightpen, and **Sketchpad 128**, from Free Spirit, supporting 80-Column mode. Then we catch sight of **Spectrum 128**, also from Free Spirit, a paint program for the 128D or 128 with 64K video RAM upgrade, and **Basic 8**, a graphics programming environment for the 128 with 80-column display.

The walls seem more geometric in form as we enter the computer-aided-design (CAD) room. Here we find Abacus's **Cadpak**, a bit-mapped program in C-64 and C-128 versions that can swap pictures with other graphics programs. The newer version supports input from the keyboard, 1351 mouse or lightpen, and it sports a dimensioning feature for scaled output. We also marvel at the professional features of Free Spirit's **Home Designer Plus 128**, a two-dimensional CAD program with object-based graphics you can zoom in on for heightened detail.

Suddenly, shadowy forms flap by overhead! We whirl around to face Kira Corporation's **Flexi-Aided Design** and



As our quest for functional C-64 and C-128 programs continues, we uncover many that can foster your creative urges and strengthen your skills.

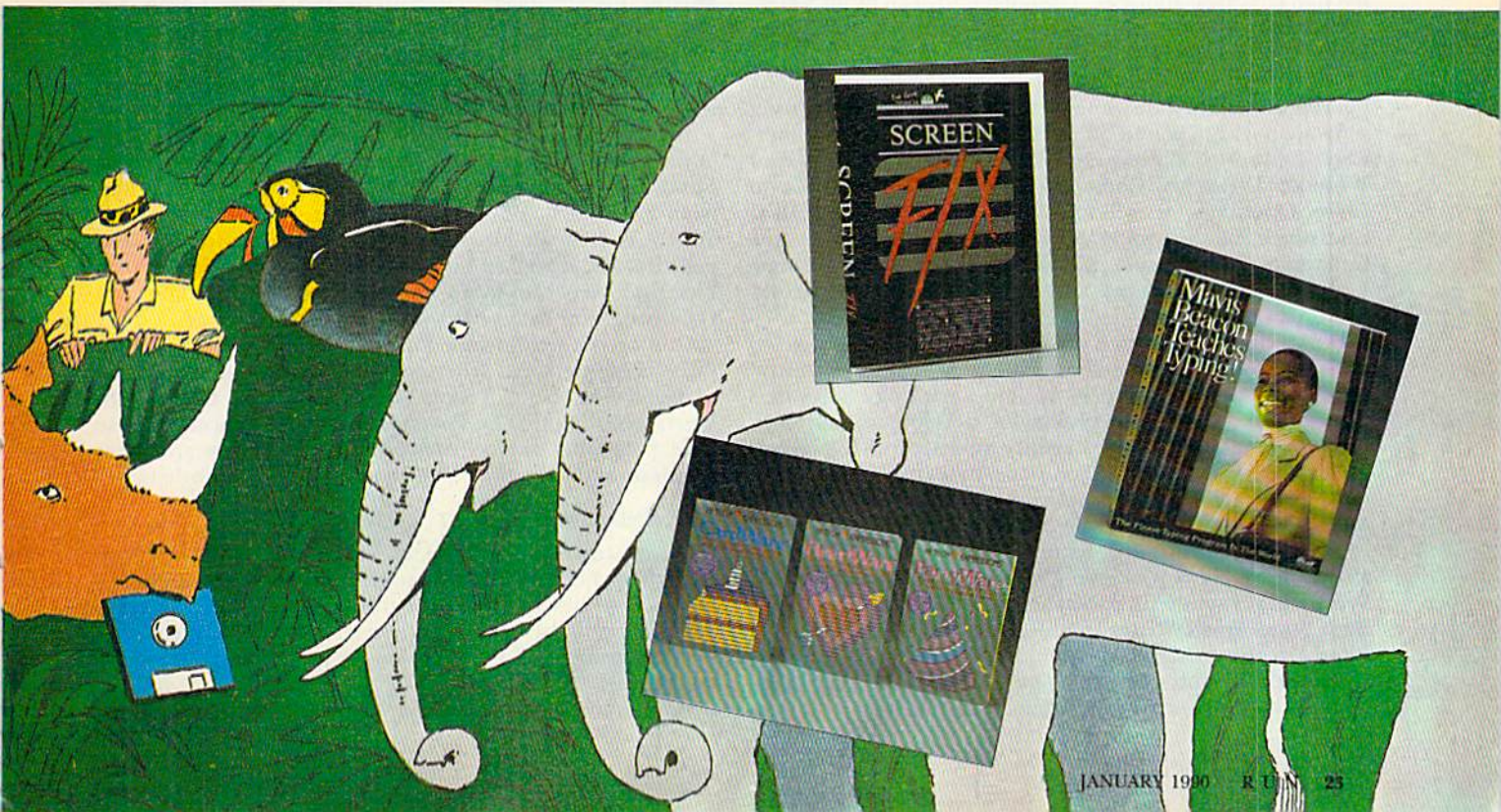
By ELLEN RULE

Perspectives II, C-64 programs for drawing, manipulating and animating "three-dimensional" wire-frame objects, and IHT's **CAD 3-D**, also for the C-64, which lets you create 3-D wire-frame designs that can be saved in Doodle! format or printed by a Commodore-compatible printer.

Bursting with renewed imagination, we hurry on to find more treasures and come to a row of nooks filled with myriad specialty graphics programs for the C-64. First are Broderbund's **The Print Shop** and **The Print Shop Companion**, as well as Unison World's **PrintMaster Plus**, all three of which produce greeting cards, banners, calendars, posters, invitations and personal stationery. Other crevices hold Activision's **Post Cards**; Hi Tech Expression's **CardWare**, **PartyWare** and **HeartWare**; Intracorp's **Bumper Sticker Maker**, **Business Card Maker** and **Button & Badge Maker**; and Simon & Schuster's **Great International Paper Airplane Kit**.

Certificates on the walls of the next recess announce **Award Maker**, from Baudville, **AwardWare**, from Hi Tech, and Springboard's **Certificate Maker**, all ready to help acknowledge achievement. Next door, **Create-A-Calendar**, from Epyx, waits to produce customized daily, weekly, monthly and annual calendars, while Spinnaker's **Business Form Shop** for the C-64 is ready to let you design and save custom form layouts. Then, last in the row, come **Leroy's Label Maker**, from Cheatsheet Products, providing merge capability with popular C-64/C-128 databases and word processors, and **Label Wizard**, from Kracker Jax, which combines text with PrintMaster or Print Shop graphics.

Motion in the shadows lures us further down the passageway to a room full of magic. As we step inside, our eyes are bedazzled by **Cybervideo**, Touchstone's integrated environment for creating animations with hi-res color graphics, sprites, text, music and sound effects; **Slideshow Creator**, from Kracker Jax, and **Moving Pictures**, from CDA, both C-64 programs for creating animation with graphics from popular drawing programs; **Video Title Shop**, from Datasoft, for designing and adding text borders and graphics screens to video recordings; and **Screen F/X**, from Solutions Unlimited, an in-depth package for creating professional quality graphics, including wipes, dissolves and other special effects, for video titling and electronic greeting cards. ►



Near the end of the graphics corridor, a cryptic message on the wall instructs, "Descend for pleasure, self-improvement and enlightenment." We clamber down the rickety steps to the next level of the Cavern of Creativity.

How To Do It

At the bottom of the steps, we're lured by a faint rhythmic tapping into a room full of typing programs. Low tables hold The Software Toolworks' **Mavis Beacon Teaches Typing**, Simon & Schuster's **Typing Tutor IV**, **Type!**, from Broderbund, **Tempo Typing**, from Radarsoft, and Scarborough's **Mastertype**, all providing exercises and/or games that teach ten-finger typing on the C-64. A quiet corner nearby holds Free Spirit's **Easy Sign 64**, a tool for learning and practicing the sign language alphabet. The quiet is broken by an S.O.S., and we dash around the corner to rescue Free Spirit's **Morse Code Trainer**, but it's just practicing.

Since nothing is amiss, we move along to inspect a nook floored with black-and-white tiles. There's a brain-exercising software package poised on each tile, among them The Software Toolworks' **Chessmaster 2100**, Enlightenment's **Paul Whitehead Teaches Chess** and **Jerry Silman's Guide to Chess Openings**, as well as Cardinal Software's **Cardinal Chessmate**, all providing instruction and practice in the traditional strategy game. CBS's **Charles Goren on Bridge**, Radarsoft's **Bridgemaster** and **Bridge 5.0**, from Artworx, rest on other tiles.

Descending deeper into the cavern, we spot a bejeweled chest off to one side, bursting with what may be ancestral scrolls. On closer inspection we find Genealogy Software's **Family Tree**, a dynamic system for developing your own family's genealogical table. **Family Roots**, from Quinsept, **Arbor Aide**, from Software Solutions, Byteware's three-module **Software for the Genealogist**, and **VitaStat**, by Don Marsh, are also stuffed in the coffer.

Listen! There's strange, haunting music coming from the alcove across the way! Peeking inside, we discover Abacus's **Synthy** music synthesizer software for the C-64, Mindscape's **Bank Street Music Writer** and Electronic Arts' **Instant Music**. After a pause to savor the sounds, we head into the next room and encounter a marble podium supporting a leather-bound book. It's a weighty tome, and the first page recommends that we start by improving our language skills with Timeworks' **Evelyn Wood Dynamic Reader**, Mindscape's **Crossword Magic** or Radarsoft's **Crossword** for the C-64. In the same vein of self-improvement, we also find **R.S.V.P.**, from Blue Lion, which teaches proper etiquette for business and social situations, and **Remember!**, from Britannica, for studying and remembering facts, lists, sequences and relationships.

Oh! What was that smell? The aroma of exotic spices draws us into a bustling room where **America Cooks** is bubbling under the direction of Concept Development Associates. Their series of **Great Chefs** is here also, as well as Free Spirit's **Recipe Filer** and Merrill Ward's **Celebrity Cookbook**, featuring favorite recipes of popular figures such as Frank Sinatra, Ronald Reagan, Bob Hope and Sophia Loren. For those with less in mind, there's Scarborough's **Original Boston Computer Diet** and **The Model Diet**, from Softsync, with a calorie guide to determine your ideal weight and nutritional requirements.

Following a call from "beyond," we penetrate the depths of the cavern, where a sense of mystery shrouds **ESP Tester**, **Fun Biorhythms** and **Tarot 128**, all, appropriately enough, from Free Spirit. But some mystery is dispelled by Merrill Ward's **The Dream Machine**, which analyzes, interprets and logs dreams, as well as **Timothy Leary's Mind Mirror**, from Electronic Arts, and **Mind Prober**, from Human Edge, both C-64 programs that reveal what makes people tick.

Our torches are dim now, but their waning glow illuminates three rather personal programs: **Dr. Ruth's Computer Game of Good Sex**, from Avalon Hill, **The Sexual Edge**, from Merrill Ward, and **The Love Quest**, from Intracorp. These C-64 programs can help analyze your sexuality and relationships and determine your compatibility with others.

The End of the Quest

As we ascend to the exit, we reflect on our finds and acknowledge that, although there are some impressive new products, many of the best creativity programs (as well as last month's productivity finds) for Commodores are classics. Reflecting further, we realize that, while most of the programs are designed for the C-64, we did bag some 128-mode packages.

If you want to learn more about these programs and others,

ILLUSTRATED BY KERRY GAVIN

you can read about them in past issues of *RUN*. Comprehensive articles, covering a number of packages, have included "Electronic Expressions" (on combining text and graphics, December '86), "Electronic Expressions Update" (May '87), "All in the Family Tree" (genealogy, December '87), "A Happy New You!" (self-help, January '88) and "Graphics Galore" (July '88).

Many packages have also been reviewed individually in Software Gallery. Check our annual indexes to articles and reviews to find the ones you're interested in. All annual indexes have appeared in the January issue of the following year except the 1987 index, which appeared in February of 1988. Write or call for the back issues you need; the last page of this magazine gives instructions.

The packages mentioned here can be purchased through the manufacturer, a designated distributor or mail order outlets. Mail order firms that carry Commodore software include Briwall, PO Box 129, Kutztown, PA 19530, 800-638-5757; Montgomery Grant, PO Box 58, Brooklyn, NY 11230, 800-759-6565; Software Discounters of America, PO Box 111327, Dept. RN, Blawnox, PA 15238, 800-225-7638 (in state, 800-223-7784); Tenex Computer Express, PO Box 6578, South Bend, IN 46660, 800-PROMPT-1; Software Support International, 2700 NE Andresen Rd., Vancouver, WA 98661, 800-356-1179; and Lyco Computer, PO Box 5088, Jersey Shore, PA 17740, 800-233-8760. ■

Ellen Rule is author of RUN*'s Commodore Clinic column and an active user's group member. She works as a psychiatric nurse and runs a home-based business, Home Computer Resource.*

Table 1. Manufacturers' addresses.

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Byteware
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Monmouth, IL 61462

CBS; distributed by Mindscape
Address below

Cheatsheet Products, Inc.
PO Box 111368
Pittsburgh, PA 15238

Concept Development Associates
45 Cordova St.
St. Augustine, FL 32084

Crystal Rose Software
109 S. Los Robles
Pasadena, CA 91107

Datasoft; distributed by Electronic Arts
Address below

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San Mateo, CA 94404

Enlightenment, Inc.
1240 Sanchez St.
San Francisco, CA 94114

Epyx
600 Galveston Drive
Redwood City, CA 94063

Free Spirit Software
PO Box 128
Kutztown, PA 19530

Genealogy Software
PO Box 1151
Port Huron, MI 48061

Hi Tech Expressions
584 Broadway, Suite 1105
New York, NY 10012

Human Edge Software
2445 Faber Place
Palo Alto, CA 94303

IHT Software
2269 Chestnut St., #162
San Francisco, CA 94123

Inkwell Systems
1050-R Pioneer Way
El Cajon, CA 92020

Intracorp, Inc.
14160 SW 139th Court
Miami, FL 33186

Kira Corp.; distributed by Briwall
Address above

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Mexia, TX 76667

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Quinsept, Inc.
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Scarborough Systems; distributed by Mindscape
Address above

Simon & Schuster Software
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One Gulf + Western Plaza
New York, NY 10023

Softsync
162 Madison Ave.
New York, NY 10016

Software Solutions
7378 Zurawski Court
Custer, WI 54423

The Software Toolworks; distributed by Electronic Arts
Address above

Solutions Unlimited; distributed by Free Spirit Software
Address above

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Springboard Software
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Minneapolis, MN 55435

Timeworks
444 Lake Cook Rd.
Deerfield, IL 60015

Touchstone
PO Box 1378
Coeur d'Alene, ID 83814

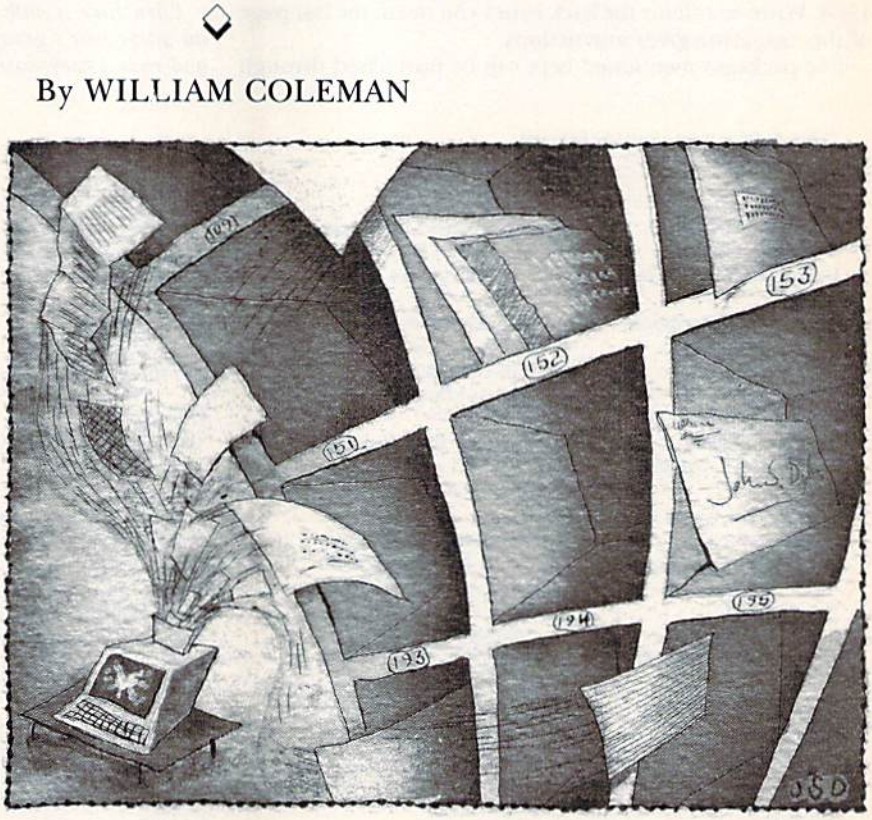
Unison World, Inc.
2150 Shattuck Ave.,
Suite 902
Berkeley, CA 94704

Merrill Ward & Associates
255 N. El Cielo Rd., Suite 222
Palm Springs, CA 92262

Editor's note: If an address for software mentioned in the text is not listed in the table, the manufacturer has probably gone out of business or has stopped production on the product. This doesn't mean the program cannot be found: check stores, used merchandise ads, user's groups, software discount houses and mail order companies.

RUNbase 128

Here's what you've been searching for! An easy-to-use database for your record-keeping needs.



By WILLIAM COLEMAN

While there are several good databases available for the C-128, they all offer more options and complexity than I ever need. So, I wrote RUNbase 128, a simple, easy-to-use database for the C-128 in 80-Column mode. RUNbase can handle about 2000 records, so it's great for everything from flexible mailing lists to disk catalogs, inventories or what have you.

Type in RUNbase from Listing 1, using *RUN*'s Checksum program to check for typing errors, then save a couple of copies to disk. When you run the program, a Main menu with eight options appears. Highlight your choice by using the cursor-up and -down keys; then press the return key. Following are descriptions of the Main menu options.

Create a Database generates a new RUNbase 128 database. When the program asks how many fields you want, enter a number from 1 to 16. Then you're asked for the name, size and type of each field. Use the cursor-up and -down keys to scroll through the list of fields and make your responses. RUNbase allows up to 47 characters in a field and supports the following types:

- **Text**—unshifted and shifted alphanumeric characters and symbols
- **Uppercase**—shifted characters only
- **Numeric**—numerals 0–9 and . + –
- **Logical**—a single character only: Y(es)/N(o), T(rue)/F(alse)

As you enter each field, the program displays the total number of characters in the record so far (the maximum is 255).

Once you've entered all the fields, a prompt for a filename appears. At this point, you can abort and return to the How Many Fields prompt by pressing the up-arrow key. Enter a filename, and the database is created on the disk; then the program returns to the Main menu.

Open a Database in the Main menu opens a previously defined RUNbase database. When you're prompted for the filename, enter it completely, without wild cards such as *. Once the database is open, its name and record count appear at the bottom of the Main menu. If a database is currently open, it is closed before the new one is opened.

Close Database closes the current database and updates the index file (see Index Database and Search below) on the disk.

Edit Database enables you to add to or alter an open database. The Edit submenu provides the following choices: Edit Record, Add Record, Next Record, Previous Record, Goto Record, Goto Top, Goto Bottom, Search, Toggle Delete and Exit. Most of these are self-explanatory, but a few need some comment.

First of all, when using Edit Record and Add Record, you use the cursor keys to scroll through the fields. But if you scroll up past the top field, the operation aborts. The delete and insert keys function normally.

Second, the Toggle Delete option marks and unmarks a record for deletion. A deleted record won't appear in reports (see Print Reports below), but it isn't removed from the database unless you use the Main menu Pack option (below).

Finally, the Search option uses the index fields (see Index Database below) to search through an indexed database. If you don't have an index set up, Search is inoperative.

View Database in the Main menu opens a submenu with three options: View Records, Statistics and Exit. View ►

RUN it right: **C-128 (in 80-Column mode); printer optional**

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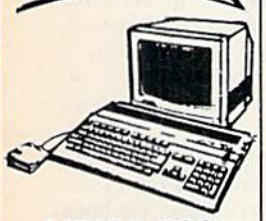

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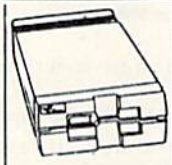

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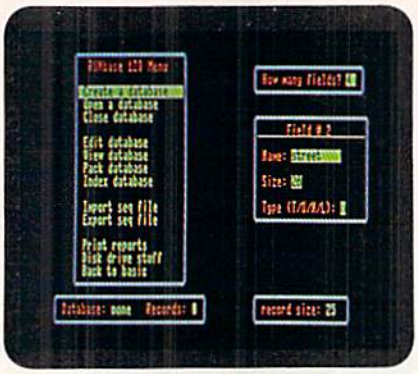
Records lets you step through your records, one at a time. Statistics displays a description of each field, the number of records in the database, and the names of the index fields.

Pack Database in the Main menu removes all records from the database that have been marked for deletion and "packs" the remaining records together to fill the gaps. For large databases, this process may require several minutes.

Index Database sets the index fields. For viewing purposes, the database is sorted alphanumerically by these fields, but with lowercase *preceding* uppercase. Two fields—primary and secondary—can be active at one time, but, due to space limitations, only 20 characters are significant for sorting purposes, the first 15 in the primary field and five in the secondary. However, this should be adequate for most databases.

Import SEQ File reads a non-RUNbase sequential file from disk and adds it to the current database, one field at a time. Fields in the sequential file must be separated by a carriage return, and empty fields must consist of a single space followed by a return. After using Import, you must re-index to update the index file.



Menu-driven RUNbase makes using a database easier than ever.

Export SEQ File is the reverse of Import. It writes the current RUNbase database to disk as a sequential file, with fields separated by a carriage return.

Print Reports displays a submenu with Report, Dump and Exit options.

The Report option generates customized reports of the database contents. When you select this, the program asks for the page width—the width of the printed part of the report—and the left margin. The total report width is the page width plus the left margin. Then it asks for a report title, which is printed at the top of each page. Next it presents a list of all the fields in the database. Select the ones you want to print, and they are added to the list on the screen. If there isn't enough room on the page for a field, selecting it won't work. Choose Done to start printing the report.

The Dump option lists all the fields for each record to the screen or printer, regardless of the total report width.

The **Disk Drive Stuff** submenu offers Directory, Change Drive and Exit options.

Back to Basic stops RUNbase and returns you to the Basic operating system. If the current database has been modified, the file is updated before the program quits.

That's all there is to it. Short and sweet. . .and handy! R

William Coleman, an avionics technician in the navy, is an enthusiastic GEOS user and programmer and acts as assistant SYSOP on GEnie's Commodore Roundtable.

Running Instructions: **Type in Listing 1, using *RUN*'s Checksum, and save a copy to disk before running it.**

Listing 1. RUNbase 128 program. (Available on ReRUN disk. See card at page 36.)

```
Ø GOTO 698:REM RUNBASE 128 - WI
  LLIAM COLEMAN          :REM*251
2 SYS 2816:A$=LEFT$(I$,PEEK(253
  )):RETURN              :REM*1Ø1
4 PRINT#1,A$:RETURN      :REM*112
6 AR=L-LEN(A$)-(LEN(A$)=L):IF F
  L=1 THEN FL=3:G$="Ø123456789+
  -."                    :REM*44
8 PRINT GR$RV$LEFT$(A$+SP$,L);:
  DO UNTIL AR<1:PRINT LA$;:AR=A
  R-1:LOOP               :REM*248
1Ø P=LEN(A$)+1:SYS 52591:DO:GET
  KEY X$:IF X$=UP$ THEN AR=1:E
  XIT                    :REM*99
12 IF X$<>DL$ THEN 22    :REM*175
14 IF P=1 THEN 52        :REM*251
16 IF P=L+1 THEN P=L:PRINT " "L
  A$;:A$=LEFT$(A$,L-1):GOTO54
                         :REM*234
18 PRINT LA$LEFT$(MID$(A$,P)+SP
  $,L-P+2);:FOR WW=1 TO L-P+2:
  PRINT LA$;:NEXT        :REM*1Ø8
2Ø P=P-1:A$=LEFT$(A$,P-1)+MID$(
  A$,P+1):GOTO 54        :REM*189
22 IF X$<>IN$ THEN 3Ø    :REM*245
24 IF P>=L THEN 52       :REM*137
26 A$=LEFT$(A$,P-1)+" "+MID$(A$
  ,P):A$=LEFT$(A$,L)     :REM*2ØØ
28 PRINT LEFT$(MID$(A$,P)+SP$,L
  -P+1);:FOR WW=1 TO L-P+1:PRI
  NT LA$;:NEXT:GOTO 54:REM*1Ø4
3Ø IF L=1 THEN 38        :REM*18
32 IF X$=RA$ AND P<L THEN P=P+1
  :PRINT X$;             :REM*218
34 IF X$=RA$ THEN 56     :REM*2Ø7
36 IF X$=LA$ AND P>1 THEN P=P-1
  +(P>L):PRINT X$;:GOTO 56
                         :REM*216
38 IF X$<" " OR X$>"{SHFT Z}" O
  R X$=CHR$(34) OR (X$>"{LEFT
  ARROW}" AND X$<"{SHFT A}") T
  HEN 56                 :REM*192
4Ø IF FL>1 AND (X$>="A" AND X$<
  ="Z") THEN X$=CHR$(ASC(X$) O
  R 128)                 :REM*221
42 IF FL=2 AND (X$<>"{SHFT Y}"
  AND X$<>"{SHFT N}") THEN 52
                         :REM*147
44 IF FL=3 AND INSTR(G$,X$)=Ø T
  HEN 52                 :REM*57
46 IF P<L THEN A$=LEFT$(A$,P-1)
  +X$+MID$(A$,P+1):PRINT X$;:P
  =P+1:GOTO54            :REM*152
48 IF P=L THEN A$=LEFT$(A$,P-1)
  +X$:PRINT X$LA$;:P=P+1:PRINT
   BE$;:GOTO 56          :REM*62
5Ø PRINT X$LA$;:A$=LEFT$(A$,L-1
  )+X$                   :REM*41
52 SOUND 1,1ØØØ,5:GOTO 56
                         :REM*16Ø
54 SOUND 1,25ØØ,1        :REM*89
56 LOOP UNTIL X$=CR$ OR X$=DN$:
  A=VAL(A$):SYS 52639:PRINT RO
  $;                     :REM*22Ø
58 DO WHILE RIGHT$(A$,1)=" ":A$
  =LEFT$(A$,LEN(A$)-1):LOOP:RE
  TURN                   :REM*184
6Ø TRAP 192:WINDOW Ø,Ø,79,24,1:
  A$=DB$:IF DB$="" THEN A$="NO
  NE"                    :REM*23Ø
62 A$=RD$+" {SHFT D}ATABASE: "+
  GR$+A$+RD$+"{3 SPACEs}{SHFT
  R}ECORDS:"+GR$+STR$(MR):A=LE
  N(A$)-2                :REM*2Ø7
64 WINDOW Ø,19,A,21:GOSUB 58Ø:W
  INDOW 1,2Ø,A-1,2Ø:PRINTA$;
                         :REM*166
66 W=22:R=Ø:C=(A-W)/2:MU=1:X=Ø:
  GOSUB 554              :REM*83
68 ON X GOTO 98,9Ø,7Ø,Ø,29Ø,256
  ,222,488,Ø,536,518,Ø,614,588
  ,738                   :REM*1Ø
7Ø GOSUB 72:DB$="":MR=Ø:GOTO 6Ø
                         :REM*175
72 IF SV THEN SV=Ø:GOSUB 2ØØ:GO
  SUB 412:GOSUB 448:GOSUB 2Ø4
                         :REM*126
74 RETURN                :REM*216
76 IF MR=Ø THEN A$="DATABASE IS
   EMPTY!":GOSUB 186:GOTO 26Ø
                         :REM*47
78 WINDOW 17,Ø,WS+1,FC+3:GOSUB
  58Ø                    :REM*182
8Ø FOR CR=1 TO MR:GOSUB 356:A$=
  "CRSR UP = REVERSE, SPACE BA
  R ABORTS."             :REM*9
82 IF CR=MR THEN A$=A$+" ({SHFT
   L}AST RECORD)."       :REM*31
```

Continued on p. 54.

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Money Manager

This personal finance program does everything but make the money, write the checks and pay the bills.

By REX DAY

Money Manager contains many advanced options that are not normally found in programs of this type. It maintains and balances a checkbook, records payments by category and generates reports summarizing month-to-date, year-to-date and average monthly payments.

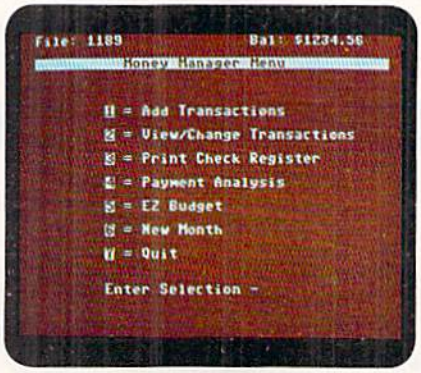
The EZ Budget part of the program provides a simple but effective way to prepare monthly and yearly financial plans by comparing estimated expenses with anticipated income and then making adjustments. Later it compares actual income and expenses with the budget. Money Manager is easy to use, with menus and on-screen prompts, as well as Help messages that are available throughout.

Category Codes

The first time you run Money Manager, follow the prompts to select up to 38 category codes for your checkbook payments and budgets. I've supplied codes that you can use or replace with your own (see Table 1). They are easy to remember, since each one consists of the first three letters of the category it designates.

Table 1. Category codes.

hou	housing
uti	utilities
tel	telephone
ins	insurance
sav	savings
cha	charge accounts
cas	cash
gro	groceries
aut	automobile
gas	gasoline
ent	entertainment
res	restaurant
clo	clothing
don	donation
med	medical
equ	equipment
xxx	(four blank categories)
mis	miscellaneous



The menu reveals the wide range of functions Money Manager provides.

The program accepts codes up to four characters long, so you can add characters to mine to further identify categories or to identify tax-deductible payments. Codes you may not need can just remain, and you can later replace them with others by using the new code in a transaction and by following the on-screen prompts for replacing unused codes. You don't have to worry—the program does not print any unused codes in reports.

You can edit codes when you're first setting up the program and at the beginning of a year, but once you start entering transactions, all you can do is replace unused codes with new ones. The four xxx blanks are supplied specifically for this purpose.

Program Options

After you've established the category codes, the main menu appears, offering seven options: Add Transactions, View/Change Transactions, Print Check Register, Payment Analysis, EZ Budget, New Month and Quit.

Select the Add Transactions option to enter your checkbook activities, doing so in the order that they appear in your checkbook. As you enter each transaction, your new balance appears on the screen, and data is accumulated in preparation for monthly and year-to-date reports.

A minimal number of keyboard entries are needed for each checkbook transaction, since Money Manager automatically repeats the date until you actually change it, and it enters the month and year in new dates. It also skips the Deposit field when a payment is entered, and check numbers are incremented by one, so you don't have to enter the check number unless it's out of consecutive order.

You can review and make changes in transactions quickly by pressing the P key for the previous transaction or the N key for the next, or you can do it through the View/Change Transaction option in the main menu.

Money Manager makes it easy to split one check payment among two or more categories. Whenever you have such a case, just enter the amount to be charged to the first code and then type S, for split, at the Help prompt. The check number, date and description are automatically placed in the next transaction, so that you have to enter only the amount for the category code.

You'll find this option particularly useful when you write checks for cash. You should be sure to keep either receipts or memos about your cash expenditures; then, at the end of the month, enter the total as a negative payment in the cash category, using a description such as "distribution of cash" and blanking out the check number. Then enter the amount for each

RUN it right: **C-64 or C-128, in 40- or 80-Column mode**

category code, using the split-check technique.

The Print Check Register and Payment Analysis options print a list of checkbook transactions for the month to date. They will also print out a report listing your month-to-date, year-to-date and average monthly payments according to category.

For a complete listing of a month's activity, select the Check Register and Payment Analysis options after the last checkbook transaction has been entered for the month.

The New Month option is handy for switching months without restarting the program. Transactions are stored on disk by month, so an earlier month's activity can be recalled quickly for viewing or printing reports. Any correction to an earlier file must also be entered as a transaction in the current month, so your checkbook balance and year-to-date totals are properly updated.

EZ Budget

The menu for the budget portion of Money Manager offers you six options: Prepare Budget, Revise Budget, Budget Analysis, New Month, Return to Main Menu and Quit. With the Prepare Budget option, you can establish budgets for as many months of the year as you wish, and then later update them using Revise Budget.

When you select any one of these options, the category codes you have in Money Manager will be listed on the screen, along with instructions that will enable you to enter or change the budgeted amounts.

You must also enter your estimated income (anticipated deposits to your checking account) for the month, to be compared to your estimated expenses. If the results of the comparison don't please you, you can make budget changes and immediately see the effects.

Change the budget as much as you want until it's balanced and best meets your financial needs. If you go on to prepare a budget for another month, you can start from the one you've already created, so you have to enter only the amounts that differ.

The Budget Analysis option prepares monthly and year-to-date reports that compare your actual income and expenditures to your budget.

These reports will help you detect adverse spending trends and provide information for future financial planning and budget revision. R

Rex Day is an accountant who resides in the mountains of Idaho.

Running Instructions: **Type in Listing 1, save it to disk and run it.**

Listing 1. Money Manager program. (Available on ReRUN disk. See card at page 36.)

```
10 REM "MONEY MANAGER WITH EZ B
   UDGET - BY REX DAY  :REM*124
20 POKE 5328Ø,Ø:POKE 53281,Ø:PR
   INT CHR$(14);CHR$(147)
                       :REM*187
30 CD=6:GOSUB141Ø:PRINT TAB(12)
   ;"{COMD 6}{15 COMD @s}"
                       :REM*25Ø
40 PRINT TAB(12);"{CTRL 9}{COMD
    K}{CTRL 2}{SHFT M}ONEY {SHF
   T M}ANAGER{COMD 6}{COMD L}"
                       :REM*98
50 PRINT TAB(12);"{15 COMD Ts}"
                       :REM*66
60 PRINT TAB(17)"WITH":PRINT TA
   B(15)"{CRSR DN}{SHFT E}{SHFT
    Z} {SHFT B}UDGET"    :REM*3
70 CD=9:GOSUB141Ø:PRINT"{6 SPAC
   Es}{SHFT P}RESS {SHFT R}ETUR
   N TO CONTINUE OR"   :REM*126
80 PRINT"{CRSR DN}{6 SPACEs}{SH
   FT P}RESS {SHFT H} FOR HELP
   MESSAGES";          :REM*154
90 GET A$:IF A$<>"H" AND A$<>CH
   R$(13) THEN9Ø       :REM*145
100 IF A$="H" THEN GOSUB523Ø:GO
    TO1Ø               :REM*181
110 POKE 5328Ø,8:POKE53281,8:CL
    R:PRINT"{SHFT CLR}{CTRL 2}"
    :A$="":E$="":CL=Ø:X=Ø:Y=Ø
                       :REM*61
120 CR=128:IF FRE(Ø)=FRE(1) THE
    N CR=64:PRINT CHR$(8)
                       :REM*215
130 IF CR=128 THEN PRINT CHR$(1
    1)                 :REM*6Ø
140 TRAN=15Ø           :REM*25
150 DIM TD$(TRAN),CT$(TRAN),DE$
    (TRAN),CN$(TRAN),CH$(TRAN),
    DA$(TRAN)          :REM*22
160 DIM CAT$(39,3),BU$(39,12),I
    NC$(12)            :REM*14
170 FORI=1TO39:SP$=SP$+" ":NEXT
    :IF CR=64 OR PEEK(215)=Ø TH
    EN CC=4Ø           :REM*28
180 FOR I=1TO4Ø:LINE$=LINE$+"{C
    OMD @}":NEXT:IF CC=Ø THEN F
    AST                :REM*114
190 GOSUB46Ø:GOTO64Ø   :REM*59
200 FLAG=Ø:GET E$:IF E$<>"" THE
    N2ØØ               :REM*2Ø6
210 J=236:IF CR=64 THEN J=211
                       :REM*17Ø
220 PRINT"{CTRL 9}<{CTRL Ø}{CRS
    R LF}";            :REM*33
230 IF Y<>4 OR F=1 THEN28Ø
                       :REM*48
240 IF A$="H" AND C=Ø THEN RETU
    RN                 :REM*114
250 IF A$="P" AND TC>1 THEN TC=
    TC-1:FP=1:RETURN   :REM*112
260 IF A$="N" AND C=1 AND TC<=T
    N THEN TC=TC+1:RETURN
                       :REM*155
270 IF A$="E" AND C=1 THEN RETU
    RN                 :REM*89
280 GET A$:IF A$="" THEN28Ø
                       :REM*196
290 IF A$=CHR$(13) THEN PRINT"
    ";CHR$(2Ø):GOTO37Ø :REM*2Ø9
300 IF A$<>CHR$(2Ø) THEN33Ø
                       :REM*1Ø4
310 IF PEEK(J)=15+Y THEN28Ø
                       :REM*1Ø7
320 E$=LEFT$(E$,LEN(E$)-1):PRIN
    TA$;:GOTO22Ø       :REM*236
330 IF PEEK(J)>CL THEN PRINT CH
    R$(7);:GOTO28Ø     :REM*79
340 IF A$=CHR$(17) OR A$=CHR$(1
    45) OR A$=CHR$(157) OR A$=C
    HR$(29) THEN28Ø    :REM*63
350 IF A$=CHR$(34) OR A$=CHR$(4
    4) OR A$=CHR$(19) OR A$=CHR
    $(147) THEN28Ø     :REM*179
360 FLAG=1:PRINT A$;:E$=E$+A$:G
    OTO22Ø             :REM*2Ø5
370 IF LEFT$(E$,1)=" " THEN E$=
    MID$(E$,2):GOTO37Ø  :REM*63
380 X=LEN(E$):IF RIGHT$(E$,1)="
     " THEN E$=LEFT$(E$,X-1):GO
    TO38Ø              :REM*144
390 RETURN             :REM*22
400 PRINT"{CRSR DN}{SHFT P}RESS ►
```

```
    {CTRL 9}{SHFT R}ETURN{CTRL
    Ø} TO CONTINUE{4 SPACEs}";
                          :REM*177
41Ø GET A$:IF A$<>"" THEN41Ø
                          :REM*252
42Ø GET A$:IF A$<>CHR$(13) THEN
    42Ø                   :REM*7Ø
43Ø RETURN                :REM*62
44Ø GET A$:IF A$<>"Y" AND A$<>"
    N" THEN44Ø            :REM*196
45Ø RETURN                :REM*82
46Ø PRINT"{SHFT CLR}":GOSUB14ØØ
                          :REM*238
47Ø PRINT"{HOME}{3 CRSR DNs}":I
    NPUT"{SHFT E}NTER MONTH AND
     YEAR (MMYY)";FILE$ :REM*51
48Ø IF FILE$="H" THEN GOSUB529Ø
                          :REM*16Ø
49Ø FILE$=RIGHT$(STR$(1ØØØØ+VAL
    (FILE$)),4)           :REM*82
5ØØ MO=VAL(LEFT$(FILE$,2)):YEAR
    $=RIGHT$(FILE$,2):YEAR=VAL(
    YEAR$)                :REM*87
51Ø IF MO<1 OR MO>12 THEN46Ø
                          :REM*34
52Ø RESTORE:FOR I=1TO12:READ A$
    :IF I=MO THEN MO$=A$
                          :REM*1Ø6
53Ø NEXT                  :REM*15Ø
54Ø S=Ø:CLOSE15:OPEN 15,8,15:CL
    OSE5:OPEN 5,8,5,+FILE$+",S,
    R"                    :REM*242
55Ø GOSUB242Ø:IF EN=62 THEN68Ø
                          :REM*227
56Ø IF EN >1 THEN46Ø      :REM*142
57Ø GOSUB58Ø:RETURN       :REM*6
58Ø TN=-1:PRINT:PRINT "{SHFT R}
    EADING THE FILE....."
                          :REM*11
59Ø INPUT#5,COUNT,BAL$,DEP,CUM
                          :REM*78
6ØØ S=S+1                 :REM*173
61Ø INPUT#5,CAT$(S,1),CAT$(S,2)
    ,CAT$(S,3)            :REM*249
62Ø IF CAT$(S,1)<>"END" THEN6ØØ
                          :REM*1Ø7
63Ø RETURN                :REM*7
64Ø TN=TN+1               :REM*162
65Ø INPUT#5,TD$(TN),CT$(TN),DE$
    (TN),CN$(TN),CH$(TN),DA$(TN
    )                     :REM*171
66Ø IF ST=Ø THEN64Ø       :REM*6Ø
67Ø CLOSE5:GOTO143Ø       :REM*135
68Ø CD=19:GOSUB141Ø:PRINT SP$;"
    {HOME}{4 CRSR DNs}":REM*182
69Ø PRINT:PRINT"{SHFT I}S THIS
    A NEW MONTH?(Y/N)";:GOSUB44
    Ø                     :REM*143
7ØØ PRINT TAB(26);A$      :REM*2Ø
71Ø IF A$="N" THEN8ØØ     :REM*134
72Ø X=MO-1:IF X=Ø THEN X=12
                          :REM*4
73Ø Y=YEAR:IF X=12 THEN Y=YEAR-
    1                     :REM*21
74Ø X$=RIGHT$(STR$(1ØØ+X),2):X$
    =X$+RIGHT$(STR$(Y),2)
                          :REM*41
75Ø CLOSE5:OPEN5,8,5,+X$+",S,R"
                          :REM*1Ø5
76Ø GOSUB242Ø:IF EN<2Ø THEN GOS
    UB59Ø:CLOSE 5:GOTO93Ø
                          :REM*155
77Ø IF EN<>62 THEN46Ø     :REM*5
78Ø PRINT:PRINT"{SHFT I}S THIS
    FIRST INPUT TO PROGRAM?(Y/N
    )";:GOSUB44Ø          :REM*139
79Ø PRINT TAB(37);A$:IF A$="Y"
    THEN85Ø               :REM*38
8ØØ PRINT:PRINT"{SHFT I}NSERT {
    SHFT D}ATA {SHFT D}ISK OR E
    NTER PROPER DATE"     :REM*65
81Ø PRINT"{CRSR DN}{SHFT P}RESS
     {CTRL 9}{SHFT R}ETURN{CTRL
     Ø} TO CONTINUE";:GOSUB14ØØ
    :PRINT"{3 CRSR UPs}"
                          :REM*158
82Ø GET A$:IF A$<>CHR$(13) AND
    A$<>"H" THEN82Ø       :REM*58
83Ø IF A$="H"THEN GOSUB531Ø:GOT
    O82Ø                  :REM*1Ø7
84Ø GOTO46Ø               :REM*158
85Ø GET A$:IF A$<>""THEN85Ø
                          :REM*214
86Ø CD=15:GOSUB141Ø:PRINT SP$;"
    {HOME}{8 CRSR DNs}"   :REM*56
87Ø PRINT:INPUT"{SHFT C}HECKBOO
    K BALANCE (XXXX.XX) ";E$:GO
    SUB217Ø:BAL$=E$       :REM*127
88Ø IF E$="H" OR E$="{SHFT H}"
    THEN PRINT"{2 CRSR UPs}";:G
    OTO87Ø                :REM*13
89Ø DA$(Ø)=BAL$:TD$(Ø)="Ø1"
                          :REM*36
9ØØ S=S+1                 :REM*216
91Ø READ CAT$(S,1):IF CAT$(S,1)
    ="END" THEN97Ø        :REM*192
92Ø GOTO9ØØ               :REM*23Ø
93Ø DA$(Ø)=BAL$:TD$(Ø)="Ø1"
                          :REM*2Ø4
94Ø S=Ø:IF MO<>1 THEN136Ø
                          :REM*53
95Ø S=S+1                 :REM*9
96Ø CAT$(S,2)="":CAT$(S,3)="":I
    F CAT$(S,1)<>"END" THEN95Ø
                          :REM*232
97Ø COUNT=1:DEP=Ø:CUM=Ø:PRINT"{
    SHFT CLR}{CRSR DN}{SHFT C}A
    TEGORY {SHFT C}ODES FOR THE
     NEXT YEAR MUST"      :REM*112
98Ø PRINT"NOW BE ESTABLISHED. {
    SHFT S}UGGESTED CODES ARE":
    PRINT"THE FIRST 3 LETTERS "
    ;                     :REM*255
99Ø PRINT"(UNSHIFTED) OF EACH":
    PRINT"CATEGORY (HOU=HOUSING
    , CAS=CASH, ETC)," :REM*146
1ØØØ PRINT"AND WILL BE LISTED F
     OR YOUR REVIEW.":PRINT"{CR
     SR DN}{SHFT A}NY CODE UP T
     O 4 ";               :REM*25Ø
1Ø1Ø PRINT"CHARACTERS CAN BE":P
     RINT"ESTABLISHED.":PRINT"{
     CRSR DN}XXX = CODES NOT YE
     T ";                 :REM*214
1Ø2Ø PRINT"ASSIGNED, AND CAN":P
     RINT"BE CHANGED NOW OR RET
     AINED AND CHANGED":REM*152
1Ø3Ø PRINT"LATER IN THE YEAR."
                          :REM*137
1Ø4Ø GOSUB4ØØ             :REM*83
1Ø5Ø PRINT"{SHFT CLR}";:S=Ø
                          :REM*83
1Ø6Ø S=S+1                :REM*123
1Ø7Ø IF CAT$(S,1)="END" THEN111
     Ø                    :REM*189
1Ø8Ø IF S=24 AND C=Ø THEN PRINT
     "{HOME}";            :REM*88
1Ø9Ø IF S>23 AND C=Ø THEN PRINT
     TAB(1Ø)              :REM*143
11ØØ PRINT"{2 SPACEs}";CAT$(S,1
    ):GOTO1Ø6Ø            :REM*39
111Ø IF C=1 THEN RETURN:REM*214
112Ø IF S>38 THEN PRINT"{CRSR D
    N}":GOTO118Ø          :REM*211
113Ø PRINT TAB(9);"{CRSR DN}{SH
    FT D}O YOU WANT MORE CODES
    ?(Y/N)":GOSUB44Ø:IF A$="N"
     THEN118Ø             :REM*82
114Ø PRINT TAB(9);"{CRSR DN}{SH
    FT H}OW MANY MORE (UP TO"3
    9-S;"{CRSR LF})";:INPUT X:
    IF X=Ø THEN1Ø5Ø       :REM*252
115Ø IF S+X>39 THEN114Ø
                          :REM*134
116Ø CAT$(S+X-1,1)="MIS":CAT$(S
    +X,1)="END"           :REM*51
117Ø FOR I=1TOX:CAT$(S-2+I,1)="
    XXX":NEXT:GOTO1Ø5Ø
                          :REM*159
118Ø PRINT TAB(9);"{CRSR UP}{SH
    FT E}NTER CHANGES OR PRESS
     RETURN"              :REM*245
119Ø S=Ø:PRINT"{HOME}"; :REM*73
12ØØ S=S+1                :REM*247
121Ø IF CAT$(S,1)="END" THEN128
     Ø                    :REM*1Ø6
122Ø IF S=24 THEN PRINT"{HOME}"
    ;                     :REM*159
123Ø PRINT TAB(1):Y=-14:CL=4:IF
     S>23 THEN PRINT TAB(11):Y
    =-4:CL=14             :REM*193
124Ø GOSUB2ØØ:PRINT"{CRSR UP}"T
    AB(CL+1);CHR$(148):REM*215
125Ø GOSUB38Ø             :REM*58
126Ø IF FLAG=1 THEN CAT$(S,1)=E
    $                     :REM*221
127Ø GOTO12ØØ             :REM*47
128Ø PRINT TAB(9);"{CRSR DN}{SH
    FT A}NY CHANGES?(Y/N){12 S
    PACEs}":GOSUB44Ø      :REM*175
129Ø IF A$="Y" THEN1Ø5Ø :REM*75
13ØØ PRINT TAB(9);"{CRSR DN}{SH
    FT P}RINT CODES ON PRINTER
    ?(Y/N)";              :REM*114
131Ø GOSUB44Ø:IF A$="N" THEN135
    Ø                     :REM*199
132Ø GOSUB365Ø:IF A$="N" THEN P
    RINT"{SHFT CLR}":GOTO13ØØ
                          :REM*4
133Ø PRINT"{SHFT CLR}{3 CRSR DN
    s}{SHFT P}RINTING....."
                          :REM*69
134Ø S=Ø:OPEN4,4,7:CMD4:C=1:PRI
    NT"{SHFT C}ODES FOR";YEAR:
    GOSUB1Ø6Ø:PRINT#4:CLOSE4
                          :REM*72
135Ø GOSUB264Ø:GOTO143Ø :REM*11 ►
```

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```
136Ø COUNT=COUNT+1          :REM*185
137Ø S=S+1                  :REM*172
138Ø CAT$(S,2)="":IF CAT$(S,1)<
     >"END" THEN137Ø        :REM*182
139Ø DEP=Ø:GOTO143Ø         :REM*126
14ØØ PRINT"{HOME}":CD=23:GOSUB1
     41Ø:PRINT"{SHFT P}RESS {SH
     FT H} KEY FOR HELP";:RETUR
     N                      :REM*142
141Ø FOR I=1TOCD:PRINT CHR$(17)
     ;                      :REM*161
142Ø NEXT:RETURN            :REM*36
143Ø PRINT"{SHFT CLR}{SHFT F}IL
     E: ";FILE$;SPC(14);"{SHFT
     B}AL: $";BAL$          :REM*189
144Ø PRINT:PRINT"{CTRL 9}{1Ø SP
     ACEs}{SHFT M}ONEY {SHFT M}
     ANAGER {SHFT M}ENU{12 SPAC
     Es}"                   :REM*174
145Ø PRINT:PRINT:PRINT TAB(8);"
     {CTRL 9}1{CTRL Ø} = {SHFT
     A}DD {SHFT T}RANSACTIONS
                            :REM*225
146Ø PRINT:PRINT TAB(8);"{CTRL
     9}2{CTRL Ø} = {SHFT V}IEW/
     {SHFT C}HANGE {SHFT T}RANS
     ACTIONS"               :REM*165
147Ø PRINT:PRINT TAB(8);"{CTRL
     9}3{CTRL Ø} = {SHFT P}RINT
      {SHFT C}HECK {SHFT R}EGIS
     TER"                   :REM*2Ø5
148Ø PRINT:PRINT TAB(8);"{CTRL
     9}4{CTRL Ø} = {SHFT P}AYME
     NT {SHFT A}NALYSIS"
                            :REM*116
149Ø PRINT:PRINT TAB(8);"{CTRL
     9}5{CTRL Ø} = {SHFT E}{SHF
     T Z} {SHFT B}UDGET":REM*37
15ØØ PRINT:PRINT TAB(8);"{CTRL
     9}6{CTRL Ø} = {SHFT N}EW {
     SHFT M}ONTH"           :REM*14
151Ø PRINT:PRINT TAB(8);"{CTRL
     9}7{CTRL Ø} = {SHFT Q}UIT"
                            :REM*124
152Ø PRINT TAB(8);"{2 CRSR DNs}
     {SHFT E}NTER {SHFT S}ELECT
     ION -"                 :REM*225
153Ø GET A$:IF A$<"1" OR A$>"7"
      THEN153Ø              :REM*114
154Ø ON VAL(A$) GOSUB155Ø,245Ø,
     275Ø,326Ø,366Ø,11Ø,555Ø:GO
     TO143Ø                 :REM*198
155Ø PRINT"{SHFT CLR}":IFTN<>TR
     AN THEN159Ø            :REM*48
156Ø PRINT:PRINT"{SHFT M}AXIMUM
      TRANSACTIONS OF";TRAN;"HA
     VE BEEN":PRINT"ENTERED."
                            :REM*184
157Ø PRINT"{SHFT S}AVE YOUR ENT
     RIES (OPT 2), AND INCREASE
      {SHFT T}{SHFT R}{SHFT A}{
     SHFT N} IN LINE 14Ø OF PRO
     GRAM."                 :REM*222
158Ø GOSUB4ØØ:RETURN        :REM*235
159Ø TN=TN+1:TC=TN:EDIT=Ø:C=Ø:X
     $=""                   :REM*171
16ØØ GOSUB2Ø9Ø:CD=1Ø:GOSUB141Ø:
     PRINT"{SHFT T}YPE {CTRL 9}
     END{CTRL Ø} TO SAVE TRANSA
     CTIONS";               :REM*136
161Ø GOSUB14ØØ              :REM*14Ø
162Ø IF TC>1 THEN TD$(TC)=TD$(T
     C-1)                   :REM*2Ø9
163Ø Y=4:PRINT"{HOME}{2 CRSR DN
     s}";TAB(2Ø);TD$(TC);YEAR
                            :REM*48
164Ø A$="":CL=21:PRINT"{CRSR UP
     }";TAB(19);:GOSUB2ØØ:IF A$
     ="H" THEN GOSUB534Ø:GOTO16
     ØØ                     :REM*24
165Ø IF TC=TN AND DE$(TN)<>"" T
     HEN167Ø                :REM*113
166Ø IF A$="N"AND TC>=TN THEN P
     RINT" {CTRL 9}{SHFT L}AST
     {SHFT T}RANSACTION":FORI=1
     TO9ØØ:NEXT:A$="E"      :REM*2Ø4
167Ø IF A$="P" OR A$="N" THEN25
     4Ø                     :REM*24
168Ø IF A$="E" THEN X$="N":GOTO
     2Ø4Ø                   :REM*82
169Ø IF FLAG=1 THEN TD$(TC)=E$:
     PRINT"{CRSR UP}";TAB(19);T
     D$(TC);YEAR"{CRSR LF} "
                            :REM*1Ø2
17ØØ IF C=Ø AND E$="E" OR E$="E
     ND" THEN TN=TN-1:GOSUB264Ø
     :RETURN                :REM*96
171Ø Y=Ø:IF VAL(TD$(TC))<1 OR V
     AL(TD$(TC))>31 THEN163Ø
                            :REM*91
172Ø F=Ø:CD=2Ø:GOSUB141Ø:PRINT
     SP$:IF C=Ø THEN PRINT SP$;
                            :REM*28
173Ø PRINT"{HOME}{2 CRSR DNs}"
                            :REM*52
174Ø S=Ø:CL=18:PRINT:PRINT TAB(
     15);:GOSUB2ØØ          :REM*194
175Ø IF C=1 AND CT$(TC)<>""THEN
      CHANGE=VAL(CH$(TC))+VAL(C
     H$(TC)):X=1:GOSUB223Ø
                            :REM*1Ø9
176Ø X=Ø:IF FLAG=1 THEN CT$(TC)
     =E$                    :REM*2Ø8
177Ø CL=37:PRINT:PRINT TAB(15);
     :GOSUB2ØØ:IF FLAG=1 THEN D
     E$(TC)=E$              :REM*186
178Ø IF C=1 OR TC<2 OR X$="S" T
     HEN PRINT:GOTO182Ø     :REM*49
179Ø IF VAL(CN$(TC-1+NC))=Ø THE
     N NC=NC-1:IF TC-1+NC<>Ø TH
     EN179Ø                 :REM*145
18ØØ CN$(TC)=STR$(VAL(CN$(TC-1+
     NC))+1):PRINT:PRINT TAB(15
     );CN$(TC);"{5 CRSR LFs}";
                            :REM*64
181Ø CN$(TC)=RIGHT$(CN$(TC),LEN
     (CN$(TC))-1)           :REM*37
182Ø CL=2Ø:NC=Ø:PRINT;TAB(15);:
     GOSUB2ØØ:IF FLAG=1 THEN CN
     $(TC)=E$               :REM*139
183Ø CL=22:PRINT:PRINT TAB(15);
     :GOSUB2ØØ:GOSUB217Ø
                            :REM*148
184Ø IF FLAG=1 THEN CH$(TC)=E$:
     PRINT"{CRSR UP}";TAB(15);C
     H$(TC)                 :REM*57
185Ø IF CH$(TC)="" OR CT$(TC)<>
     "" THEN188Ø            :REM*18
186Ø F=1:PRINT"{4 CRSR DNs}{SHF
     T N}O {SHFT C}ATEGORY {SHF
     T C}ODE. {SHFT R}E-ENTER T
     RANSACTION.";CHR$(7)
                            :REM*35
187Ø FOR I=1TO2ØØØ:NEXT:GOTO254
     Ø                      :REM*216
188Ø IF CH$(TC)<>"" AND C=Ø OR
     X$="S"THEN PRINT:PRINT:GOT
     O194Ø                  :REM*225
189Ø CL=22:PRINT:PRINT TAB(15);
     :GOSUB2ØØ:GOSUB217Ø:REM*83
19ØØ IF C=1 THEN BAL$=STR$(VAL(
     BAL$)-VAL(DA$(TC))):INC=IN
     C-VAL(DA$(TC))         :REM*189
191Ø IF FLAG=1 THEN DA$(TC)=E$:
     PRINT"{CRSR UP}";TAB(15);D
     A$(TC)                 :REM*11Ø
192Ø BAL$=STR$(VAL(BAL$)+VAL(DA
     $(TC)))                :REM*61
193Ø INC=INC+VAL(DA$(TC))
                            :REM*161
194Ø IF CT$(TC)<>"" THEN S=Ø:GO
     SUB223Ø:IF A$="N" THEN2Ø7Ø
                            :REM*77
195Ø IF CN$(TC)="" OR CH$(TC)<>
     "" THEN198Ø            :REM*25Ø
196Ø F=1:PRINT"{CRSR DN}{SHFT E
     }NTER CHECK AMOUNT OR DELE
     TE CHECK NO.";CHR$(7)
                            :REM*29
197Ø FOR I=1TO2ØØØ:NEXT:GOTO254
     Ø                      :REM*127
198Ø X=Ø:FC=1:PRINT:PRINT "{SHF
     T A}NY CHANGES?(Y/N)"
                            :REM*9
199Ø IF EDIT=Ø AND FP=Ø AND CH$
     (TC)<>""THEN X=1:GOSUB14ØØ
     :PRINT"{9 SPACEs}{4 CRSR U
     Ps}"                   :REM*22
2ØØØ GET X$:IF X=1 AND X$="S" T
     HEN TN=TN+1:TC=TN:GOTO254Ø
                            :REM*227
2Ø1Ø IF X=1 AND X$="H" THEN GOS
     UB539Ø:GOTO2ØØØ        :REM*194
2Ø2Ø IF X$<>"Y" AND X$<>"N" THE
     N2ØØØ                  :REM*87
2Ø3Ø IF X$="Y" THEN254Ø
                            :REM*142
2Ø4Ø IF EDIT=1 THEN245Ø
                            :REM*178
2Ø5Ø IF FP=1 AND CH$(TN)="" AND
      DA$(TN)="" THEN TN=TN-1
                            :REM*223
2Ø6Ø FP=Ø:GOTO155Ø          :REM*2Ø2
2Ø7Ø F=1:PRINT"{CRSR DN}{SHFT R
     }E-ENTER A VALID {SHFT C}A
     TEGORY {SHFT C}ODE"
                            :REM*2Ø7
2Ø8Ø FOR I=1TO15ØØ:NEXT:GOTO254
     Ø                      :REM*234
2Ø9Ø BAL=VAL(BAL$):LE=Ø:GOSUB31
     8Ø:BAL$=NB$            :REM*12
21ØØ PRINT"{SHFT CLR}{CTRL 9}{S
     HFT T}RANSACTION {SHFT N}O
     :";TC;:PRINT TAB(24);"{SHF
     T B}AL: $";BAL$        :REM*16Ø
211Ø PRINT:PRINT"{CTRL 9}{SHFT
     D}ATE.....{CTRL Ø} "; ►
```

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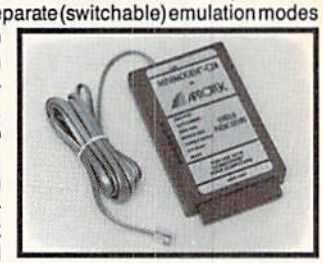

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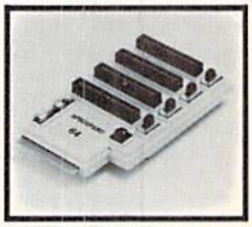

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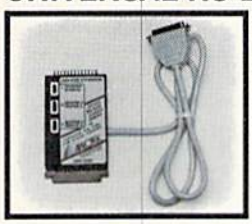

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Circle 79 on Reader Service card.

```
    MO$                    :REM*16
2120 PRINT:PRINT"{CTRL 9}{SHFT
    C}ATEGORY {SHFT C}ODE."
                           :REM*58
2130 PRINT:PRINT"{CTRL 9}{SHFT
    D}ESCRIPTION..."       :REM*143
2140 PRINT:PRINT"{CTRL 9}{SHFT
    C}HECK {SHFT N}O....."
                           :REM*179
2150 PRINT:PRINT"{CTRL 9}{SHFT
    C}HECK {SHFT A}MOUNT.."
                           :REM*58
2160 PRINT:PRINT"{CTRL 9}{SHFT
    D}EPOSIT {SHFT A}MOUNT":RE
    TURN                   :REM*133
2170 IF E$="" OR LEN(E$)=1 THEN
     RETURN                :REM*43
2180 IF RIGHT$(E$,1)="." THEN E
    $=E$+"00":RETURN       :REM*149
2190 X=LEN(E$):FOR I=1TOX
                           :REM*252
2200 IF MID$(E$,I,1)="." THEN I
    =X:NEXT:RETURN         :REM*137
2210 NEXT:A$=RIGHT$(E$,2)
                           :REM*116
2220 E$=LEFT$(E$,X-2)+"."+A$:RE
    TURN                   :REM*92
2230 S=S+1                 :REM*12
2240 IF CAT$(S,1)=CT$(TC) THEN2
    270                    :REM*181
2250 IF CAT$(S,1)="END" THEN231
    0                      :REM*148
2260 GOTO2230              :REM*31
2270 CAT$(S,2)=STR$(VAL(CAT$(S,
    2))+VAL(CH$(TC))-CHANGE)
                           :REM*41
2280 CAT$(S,3)=STR$(VAL(CAT$(S,
    3))+VAL(CH$(TC))-CHANGE)
                           :REM*65
2290 BAL$=STR$(VAL(BAL$)-VAL(CH
    $(TC))+CHANGE)         :REM*248
2300 CHANGE=0:RETURN       :REM*163
2310 IF X=1 THEN CHANGE=0:RETUR
    N                      :REM*133
2320 PRINT:PRINT"{SHFT I}S THIS
     A NEW {SHFT C}ATEGORY {SH
    FT C}ODE?(Y/N)";CHR$(7)
                           :REM*31
2330 GOSUB440:S=0:IF A$="N" THE
    N RETURN               :REM*60
2340 S=S+1                 :REM*126
2350 IF CAT$(S,1)="END" THEN PR
    INT"{CRSR DN}{SHFT A}LL CO
    DES HAVE BEEN REVIEWED":A$
    ="N":RETURN            :REM*169
2360 IF CAT$(S,3)="" THEN2380
                           :REM*108
2370 GOTO2340              :REM*132
2380 PRINT"{CRSR UP}";SP$:FORI=
    1TO300:NEXT            :REM*255
2390 PRINT"{CRSR UP}{SHFT R}EPL
    ACE UNUSED CODE {CTRL 9}";
    CAT$(S,1);"{CTRL 0} WITH {
    CTRL 9}";CT$(TC);"{CTRL 0}
    ?(Y/N)                 :REM*59
2400 GOSUB440:IF A$="Y" THEN CA
    T$(S,1)=CT$(TC):S=0:GOTO22
    30                     :REM*162
2410 GOTO2340              :REM*188
2420 INPUT#15,EN,EM$,X,X:IF EN<
    20 OR EN=62 THEN RETURN
                           :REM*97
2430 PRINT:PRINT EN;EM$:PRINT
                           :REM*166
2440 GOSUB4000:RETURN      :REM*83
2450 EDIT=1:C=1:X$=""      :REM*99
2460 PRINT"{SHFT CLR}":CD=22:GO
    SUB1410:PRINT"{SHFT T}YPE
    {CTRL 9}END{CTRL 0} TO SAV
    E TRANSACTIONS";       :REM*246
2470 GOSUB1400             :REM*237
2480 PRINT"{HOME}":PRINT"{2 CRS
    R DNs}{SHFT E}NTER {SHFT T
    }RANSACTION {SHFT N}UMBER"
    ;:INPUT X$             :REM*46
2490 IF X$="H" THEN GOSUB5420:G
    OTO2450                :REM*248
2500 IF X$<>"E" AND X$<>"END" T
    HEN2530                :REM*150
2510 IF FC=1 THEN FC=0:GOSUB264
    0                      :REM*41
2520 RETURN                :REM*108
2530 TC=VAL(X$):IF TC=0 OR TC<0
     OR TC>TN THEN2480      :REM*8
2540 C=1:GOSUB2090:CD=11:GOSUB1
    410:IF F=1 THEN 2570
                           :REM*219
2550 PRINT"{2 CRSR UPs}";LINE$;
    :IF CC=0 THEN PRINT
                           :REM*127
2560 PRINT"{2 SPACEs}{CTRL 9}P{
    CTRL 0}REV, {CTRL 9}N{CTRL
     0}EXT, {CTRL 9}E{CTRL 0}X
    IT"                    :REM*54
2570 PRINT"{SHFT E}NTER CHANGES
     OR PRESS RETURN";:REM*101
2580 IF X$="S" THEN TD$(TC)=TD$
    (TC-1):DE$(TC)=DE$(TC-1):C
    N$(TC)=CN$(TC-1):X$=""
                           :REM*213
2590 PRINT"{HOME}{4 CRSR DNs}";
    TAB(16);CT$(TC)        :REM*110
2600 PRINT:PRINT TAB(16);DE$(TC
    )                      :REM*180
2610 PRINT:PRINT TAB(16);CN$(TC
    )                      :REM*201
2620 PRINT:PRINT TAB(16);CH$(TC
    )                      :REM*155
2630 PRINT:PRINT TAB(16);DA$(TC
    ):GOTO1630             :REM*225
2640 DEP=DEP+INC:CUM=CUM+INC:IN
    C=0                    :REM*102
2650 CR$=CHR$(13):PRINT"{SHFT C
    LR}{2 CRSR DNs}{SHFT S}AVI
    NG TRANSACTIONS, PLEASE WA
    IT"                    :REM*74
2660 CLOSE5:OPEN5,8,5,"@0:"+FIL
    E$+",S,W               :REM*85
2670 GOSUB2420:IF EN>1 THEN2640
                           :REM*17
2680 S=O:PRINT#5,COUNT;CR$;BAL$
    ;CR$;DEP;CR$;CUM       :REM*54
2690 S=S+1                 :REM*223
2700 PRINT#5,CAT$(S,1);CR$;CAT$
    (S,2);CR$;CAT$(S,3)
                           :REM*159
2710 IF CAT$(S,1)<>"END" THEN26
    90                     :REM*51
2720 FOR I=0 TO TN         :REM*194
2730 PRINT#5,TD$(I);CR$;CT$(I);
    CR$;DE$(I);CR$;CN$(I);CR$;
    CH$(I);CR$;DA$(I)      :REM*99
2740 NEXT:CLOSE5:RETURN:REM*198
2750 GOSUB2770:IF X$="Q" THEN R
    ETURN                  :REM*135
2760 GOTO2880              :REM*35
2770 PRINT"{SHFT CLR}":GOSUB140
    0:BAL=0:PRINT"{HOME}{5 CRS
    R DNs}"                :REM*68
2780 PRINT TAB(10);"{CTRL 9}{SH
    FT S}{CTRL 0} = {SHFT S}CR
    EEN {SHFT D}ISPLAY"
                           :REM*253
2790 PRINT:PRINT TAB(10);"{CTRL
     9}{SHFT P}{CTRL 0} = {SHF
    T P}RINT ON PRINTER"
                           :REM*254
2800 PRINT:PRINT TAB(10);"{CTRL
     9}{SHFT Q}{CTRL 0} = {SHF
    T Q}UIT, RETURN TO MENU"
                           :REM*189
2810 PRINT TAB(10);"{2 CRSR DNs
    }{SHFT E}NTER {SHFT S}ELEC
    TION -"                :REM*229
2820 GET X$:IF X$="H" THEN GOSU
    B5450:GOTO2770         :REM*206
2830 IF X$<>"S" AND X$<>"P" AND
    X$<>"Q" THEN2820       :REM*121
2840 PRINT"{SHFT CLR}";:REM*82
2850 IF X$<>"P" THEN RETURN
                           :REM*163
2860 IF R=0 THEN GOSUB3650:IF A
    $="N" THEN2770         :REM*137
2870 PRINT"{SHFT CLR}{3 CRSR DN
    s}{SHFT P}RINTING.....":OP
    EN 4,4,7:CMD4:RETURN
                           :REM*153
2880 GOSUB3090             :REM*153
2890 FOR I=0 TO TN         :REM*151
2900 BAL=BAL-VAL(CH$(I))+VAL(DA
    $(I))                  :REM*188
2910 LE=8:GOSUB3180        :REM*69
2920 H$=LEFT$(STR$(I)+".{5 SPAC
    Es}",6):H$=RIGHT$(H$,5)
                           :REM*44
2930 IF I=0 THEN PRINT SPC(21);
    "{SHFT B}ALANCE {SHFT F}OR
    WARD";SPC(35);NB$:GOTO2970
                           :REM*9
2940 PRINT H$;MO$;" ";LEFT$(TD$
    (I)+" ",2);YEAR;" ";LEFT$(
    CT$(I)+"{5 SPACEs}",5);
                           :REM*54
2950 PRINT LEFT$(DE$(I)+SP$,25)
    ;LEFT$(CN$(I)+"{7 SPACEs}"
    ,7);                   :REM*222
2960 PRINT RIGHT$("{8 SPACEs}"+
    CH$(I),8);" ";RIGHT$("{8 S
    PACEs}"+DA$(I),8);" ";NB$
                           :REM*53
2970 LC=LC-1:IF X$="S" THEN LC=
    LC-1                   :REM*225
2980 IF LC>4 THEN NEXT:GOTO3070
                           :REM*171
2990 IF X$="P" THEN3050
                           :REM*223
```

Continued on p. 59.

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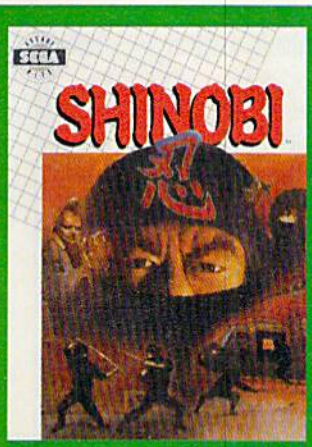

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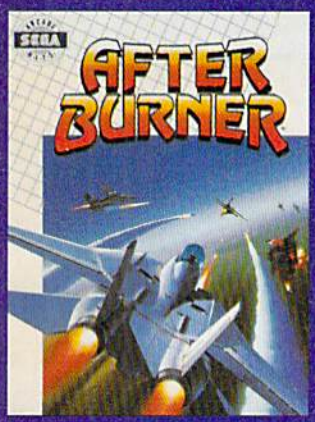

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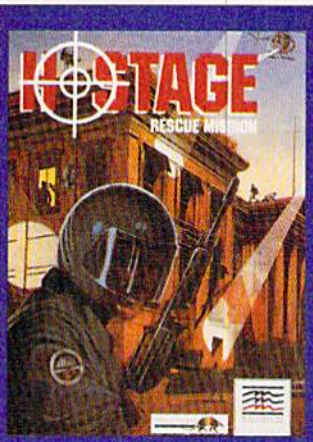

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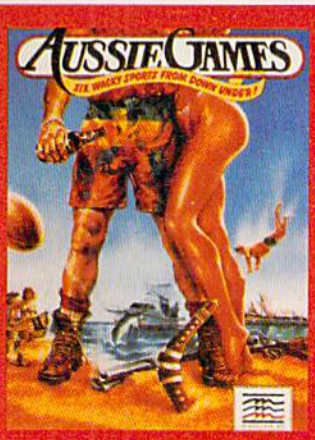

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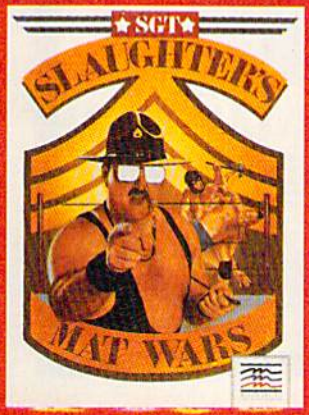

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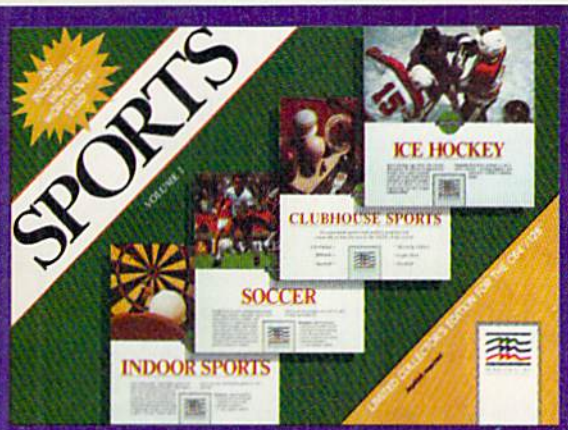

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128 Mode

Now you can add point-and-click control to your C-128 programs.

By MARK JORDAN

BERKELEY SOFTWORKS, WITH GEOS, was the first to implement the desktop metaphor for the C-64/128 family. The key hardware component that made this possible was the mouse, which let you move in an immediate one-to-one relationship with the screen.

Unfortunately, with the exception of GEOS, RUN Paint and Basic 8, little software for Commodore computers has come along that makes use of the point-and-click phenomenon. That's a great pity because, with the C-128's excellent Basic and the VIC chip's admirable sprite power, buttons are easy to do. And what are buttons? They're simply predefined areas of the screen that are point-and-clickable. Sometimes they're visible; sometimes they're not.

The little 40-column program in Listing 1 shows how easily buttons can be added to any C-128 program. As it stands, the program merely demonstrates the buttons concept within the C-128 sphere. But with a little study of its principles, you can get started buttoning up your own programs, large and small.

In general, the program works as follows. Sprite 1 is defined as the pointer sprite, matching the interrupt mouse driver that comes with the 1351 mouse. (Be sure you have that driver on the disk that's in the drive when you run this program.) Sprites 2–7 are the movable buttons. Sprite 8 is the home button.

The program first lets you place the buttons wherever they feel right, an important design concept in the desktop metaphor. With that done, you can point to any button and get it to execute. In this program, that means the computer tells you which button you pressed—no big deal until you put it to work (the remarks in the listing tell how). The home button just takes you back to the beginning.

Obviously, the primary purpose of this program is to press some buttons in your creative mind. ■

Mark Jordan, whose vocation is teaching high school English, has been programming Commodore computers for many years.

Listing 1. C-128 Button program. (Available on ReRUN disk. See card at page 36.)

```
10 REM PROGRAM RUNS IN 40-COLUM
   N MODE                :REM*252
20 REM PLACE 1351 MOUSE UTILITY
    DISK IN DRIVE        :REM*246
30 BLOAD"M1351.128.BIN":REM*130
40 SYS6144:REM START MOUSE INTE
   RRUPT                 :REM*41
50 KEY8,"":REM KEY 8 IS TRIGGER
   ED WHEN THE MOUSE BUTTON IS
   PRESSED SO WE MUST EMPTY IT
                         :REM*68
60 COLOR0,1:COLOR4,12:GRAPHIC1,
   1                     :REM*94
70 REM MACHINE LANGUAGE SUBROUT
   INE.{2 SPACEs}SEE LATER COMM
   ENTS                  :REM*195
80 FORT=0TO19:READA$:POKE3072+T
   ,DEC(A$):NEXT         :REM*213
90 REM THE GRAPHICS BELOW MEREL
   Y CREATE BUTTONS      :REM*58
100 CIRCLE1,16,11,12,5:CIRCLE1,
    15,11,12,5:PAINT1,10,11
                         :REM*0
110 FORT=2TO7             :REM*251
120 CHAR,1,1,"#"+RIGHT$(STR$(T-
    1),1),1               :REM*155
130 SSHAPE A$,4,0,27,20:SPRSAV
    A$,T                 :REM*89
140 NEXT                  :REM*15
150 CHAR1,10,1,"{UP ARROW}":SSH
    APE A$,72,0,95,20:SPRSAV A$
    ,1                   :REM*212
160 CHAR1,20,1,CHR$(14)+" {SHFT
     H}O ",1:CHAR1,20,2,CHR$(14
    )+" ME ",1           :REM*71
170 SSHAPE A$,164,6,187,26:SPRS
    AV A$,8              :REM*127
180 FORT=1TO8:SPRITE T,1,T+1:MO
    VSPR T,T*30+50,90:NEXT
                         :REM*213
190 MOVSPR 8,174,232      :REM*31
200 :                     :REM*3
210 GRAPHIC0,1            :REM*91
220 PRINTCHR$(14)"{SHFT CLR}{CO
    MD 7}{SHFT P}OINT, CLICK, A
    ND DRAG WHERE YOU WANT{3 SP
    ACEs}EACH BUTTON THEN RELEA
    SE.{2 SPACEs}{SHFT C}LICK {
    SHFT H}OME{3 SPACEs}BUTTON
    WHEN BUTTONS ARE SET."
                         :REM*171
230 :                     :REM*33
240 DO:GOSUB350:REM FIND SPRITE
     BEING CLICKED       :REM*56
250 IFS=8THENEXIT: REM 8 IS HOM
    E SPRITE             :REM*162
260 DO:MOVSPR S,RSPPOS(1,0),RSP
    POS(1,1):LOOP WHILE JOY(1)=
    128: REM THIS DRAGS THE BUT
    TONS BY FOLLOWING SPRITE 1'
    S (THE POINTER'S) POSITION
                         :REM*222
270 LOOP                  :REM*251
280 :                     :REM*83
290 PRINT"{SHFT CLR}{SHFT N}OW
    CLICK ON ANY BUTTON."
                         :REM*64
300 DO:GOSUB350:IF S=8 THEN EXI
    T                    :REM*20
310 PRINT"{SHFT CLR}{SHFT Y}OU
    CLICKED BUTTON #"RIGHT$(STR
    $(S-1),1)            :REM*242
320 REM ON S GOSUB X,X,X,X,X,X,
    X,X IS THE WAY TO MAKE BUTT
    ONS REALLY WORK.{2 SPACEs}S
     NOW EQUALS THE SELECTED SP
    RITE.                :REM*229
330 LOOP                  :REM*52
335 GOTO180               :REM*161
340 :                     :REM*143
350 DO:SYS3072:RREG A,X:IFX>0TH
    EN S=X                :REM*5
360 LOOP UNTIL JOY(1)     :REM*77
370 REM SYS 3072 FINDS THE SPRI
    TE THAT THE POINTER IS TOUC
    HING, RREG A,X SETS X EQUAL
     TO SPRITE NUMBER     :REM*201
380 RETURN                :REM*8
390 :                     :REM*193
400 DATA 18,A2,00,AD,1E,D0,4A,9
    0                    :REM*193
410 DATA 0A,A2,02,4A,B0,05,E8,E
    0                    :REM*219
420 DATA 08,D0,F8,60      :REM*232
```

■

RUN it right: **C-128; 1351 mouse**

GOLD MINE

Grab every capsule in Arkanoid; make your caveman yell at your opponent in Caveman Ugh-Lympics; plus other tips to improve your gaming skills.

By LOUIS F. SANDER

FOR ALMOST TWO YEARS, Gold Mine's gaming tips have been one of the most popular features in *Commodore Magazine*. Now that it's joined *RUN*, even more readers can gather nuggets from the Mine.

For those new to the column, Gold Mine has tips on game play for the C-64 and C-128, submitted by readers from around the world. It emphasizes tips from recent bestselling games without overlooking past favorites.

While we try to ensure that all of the tips will work as published, you should be advised that some tips work only on certain 64 or 128 configurations.

4×4 OFF-ROAD RACING: The best truck for long-distance races is the Katana with the spare fuel tank. Hitting the large boulders right before a river or mud bog will fling you across without any loss of speed.

—BILL JENTARRA
TONOPAH, NV

ARCADE GAME CONSTRUCTION KIT: When drawing black characters, it helps to draw them first in something bright, then to change it to black when the character is finished.

—CHAD SCHROEDER
STRATHAM, NH

ARKANOID: Other than the "D" capsule, you should grab every capsule that appears on the screen. Each one contributes significantly toward an extra life.

But watch out if the "D" capsule appears. Because it accelerates the ball segments formed, you're likely to lose all three very quickly. Grab "D" only if the ball is moving very slowly, or if you have room to handle the extra speed.

If you do get the "D" capsule, no new bonus capsules will appear until two of the ball segments are lost. Because each capsule is worth 1,000 points, you might want to let two ball segments escape immediately.

—BRUCE D. ROSE
ADDRESS UNKNOWN

BARD'S TALE III: Instead of wasting valuable spellpoints in healing your party, press P for party. Everyone but your Bard will defend. The Bard will play "Bringaround Ballad." The next time, do the same thing, but have everyone in your party defend. Keep it up until everyone is healed.

If you can't figure out what an item is, pass it around to other players in your party. Try to see which players can equip it.

—LIL WILLARD
WASHINGTON, DC

BUBBLE BOBBLE: Use the ice cream cones on your enemies, and they'll turn into 10,000-point diamonds.

On levels 1 and 6, blow as many bubbles as you can before killing the last opponent. You'll end up with lots of fruit.

The red lamp gives you points for moving and jumping, and the yellow lamp gives you more firing power. The blue cross turns your enemies into diamonds, while the brown cross lets you breathe fire.

—KEVIN LONERGAN
MERRICK, NY

CAVEMAN UGH-LYMPICS: In the clubbing event, you can make your caveman yell at your opponent. Just press the joystick button (as if you were going to play the look-at-the-birdie trick) when the meteor falls at the lower left of the screen. When the caveman yells, you get to see your opponent go flying.

—MARK FONS
ADDRESS UNKNOWN

CURSE OF THE AZURE BONDS: An ideal party consists of two fighters, a paladin, a cleric, a magic-user and either a thief or a fighter/thief.

When you first start out, make sure you follow the hints on the reference card. If you spend your money carefully, you should be able to afford plate-mail armor for a few of your characters. Remember not to visit Filani the Sage before you have bought everything you need. She takes half your gold as payment for her services.

When you attack the king's carriage, surrender at the first opportunity. You'll avoid unnecessary battles.

Once you've found the treasure room in the thieves' guild (don't enter the sewers until you've found it), rest and memorize spells. If you find armor that you think may be magic, try it on and watch your armor class. If it goes down, then you either have better armor or magical armor.

When travelling to and from the standing stones, go by the wilderness routes. Fire Knives and Red Plumes patrol the roads.

In the village of Hap, kill some of the dark elf patrols. Take their weapons and armor. Dark elf chain mail is equal to plate mail +1, and dark elf long swords do more damage than regular swords.

It's also necessary to kill some dark elf patrols to reduce the number of elves in the barn. The more patrols you eliminate, the better your chances of defeating the Efreet.

When you are going down in Dracandro's tower, there is a dark elf lord who is very hard to defeat. Cast spells like Haste, Bless and Prayer to have a chance of killing him. On the second level down, there is a similar elf who demands gold and magical items. He is only an illusion. If you attack him, he vanishes.

Search when you are near Daggerfalls, and find a magic shop that sells magic items and spells. There is another shop in Zhentil Keep.

—CHRIS WILLIAMSON
EAST BOLTON, ONTARIO, CANADA

OPERATION WOLF: To complete all six mission objectives, you must keep your injury level relatively low. To do this, always leave one man alive at every level, but destroy all helicopters, armored vehicles, and so on. ►

While he shoots you periodically, pick up supplies. Keep picking up supplies until you have six magazines and eight grenades, with your health relatively low. This doesn't always work, but when it does, you can complete the whole game and see the final screen!

—ALVIN TAM
HACIENDA HEIGHTS, CA

POOL OF RADIANCE: To the east of the Kobold Cave is a forest in the middle of a swamp. Go into the castle there and find a passage underground. There's an anti-magic zone there, but you can rest as long as you want to after a battle.

Search all of the pools to find some shields +2. When you go to Yarash's pyramid, you can rest almost anywhere near an exit or wherever the path goes diagonally. Look for some thieves; they have magic wands.

After defeating Yarash, find a switch on the wall in the room; change it to copper. Find a teleport and go into it. Search the room you appear in, and you'll find some magic items. Go back in the teleport and change the switch to blue. Go out the teleport, and you should be near an exit.

When you go to rescue the heir of Bivant, first find someone there who will sell you a pass to see the captain. Show the pass to the guards. If you fight the captain, you will get magic shields and a plate mail +3. Kill the captain before rescuing the prisoners.

—MICHAEL DAVISSON
BRIDGETON, MO

ROBOCOP: To get past level one, try to get to the last house as quickly as possible. Kill just a few thugs along the way, so you can acquire the three-way bullets just before reaching the last house. You will also need armor bullets for your three-way bullets.

The last house will have two windows with three thugs. You must shoot the three thugs in one shot, killing all. Proceed a few steps to the right of the building, and three more thugs will appear in the windows. Kill them the same way. Do this several times and no more thugs will appear. Keep walking to the right and proceed to the next level.

Do the same in level three, but shoot more thugs along the way.

—EDDIE IVANOV
KANSAS CITY, KS

STAR WARS: An easy way to get through the tunnel is to go to the bottom-right corner and stay there. The bad guys won't touch you.

—RON SOLENSKE
RAHWAY, NJ

TECHNOCOP: The third boss can only be killed after he pushes the can of toxic waste at you. You leap over the can and fire. To set it all up, move slowly when you reach his floor. Then you will be at the edge of the screen when he appears.

—TOM KURIAN
NEW HYDE PARK, NY

TEST DRIVE II: THE DUEL: Try out the Porsche 959 and the Ferrari F40 on all levels, even if you are a beginner. This will improve your ability to feel and control the cars.

The program allows you to pass cars very closely. With practice, it is even possible to go between two cars.

When driving an automatic, you can save time and points by quickly pulling back on the joystick, then releasing it when the rpm needle is at 5500. The computer waits until below 5000 rpm to change.

In Standard mode, it is safe to downshift at about 5500 rpm.

—JAMES GROSS
MILLSTONE, KY

THE THREE STOOGES: In the long run, it's better to choose an odd-job square than a money square. Money squares, though a guaranteed source of income, don't pay as much as odd-job squares, especially at the beginning of the game. Money is important, because you need to make a lot each day if you want to repair the orphanage and marry Ma's daughters.

—GENE MUI
CHICAGO, IL

TIMES OF LORE: When you start off, be sure to talk with the monk at the inn in Eralan's capital city.

On your second mission (to recover the Tablet of Truth from Heidric's castle), you should talk to the inhabitants of Ganestor. You'll learn about a secret passageway into the castle. The object of your quest is in one of the rooms on the first floor.

On the mission to kill an evil Lyche, you find out that the only way to do so is to douse him with holy water. Holy water can be purchased from Friar Kaine of Ryder.

Sometimes, when further travel in a dungeon or corridor seems impossible, you can find a secret passageway. Push on pressure plates or locate a lever in the wall.

Among the possessions you accumulate in the game are the blue scroll, which temporarily freezes character movement, and the red scroll, which kills all hostile creatures on the screen. Keep a sharp lookout for the ring of invisibility, the boots of speed, the scroll of transportation, the magic axe, the potion of blinking, and the dagger.

—PHILIP S. GWYNN III
MADISON, AL

ULTIMA V: Keys to open odd doors can be found in the northwest corner of Minoc. To get a grappling hook (for climbing mountains), talk to the Lord of Empath Abbey.

Search immediately after a moongate disappears, and you'll find a moonstone. That moongate will appear wherever you use the moonstone.

Here are some words to dungeons: Fallax-Deceit, Vilis-Despise, Malum-Wrong, Infama-Shame.

—CHRISTIAN BERCKES
SLIDELL, LA

WHO FRAMED ROGER RABBIT?: Tired of waiting for Roger Rabbit to load? To speed up the loading process, press the space bar when the "BV" title screen appears. This will take you to the Turn Disk Over and Press Return prompt.

—CURTIS CLEVINGER
HEMET, CA

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Submit all your tips on standard 8½-by-11 sheets of paper. Type or write legibly, and be sure to include your full name and address.

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OLD

THE RAMBOard

Beyond Super

RAMBOard does just what the other copy card on the market does: it adds RAM to your 1541 disk drive. This RAM is used to create a workspace where custom software can work its magic. Copy protection is evolving past the point of nibblers and other software-only solutions. Believe us, card based copiers are the future of archival technology.

So how do you decide between our card and "Brand X"? Don't compare the similarities - compare the differences. Their card is just "out there". You buy it, and that's pretty much it. RAMBOard was designed from the very beginning as an integral component in Maverick *, a complete system of archival tools and products. Their card puts the burden of the work on you. Are you good at soldering? You better be - their card REQUIRES it. On the other hand RAMBOards require NO soldering to install, the only exception being a handful of older 1541C's. That's not all - the other guys say they don't use parameters, but what they really mean is they don't WRITE parameters. The user is required to make special critical "copy adjustments" to copy software. Sounds like creating parameters to us. On the other hand, RAMBOard uses Maverick parameters, designed by experts to instantly and easily copy today's toughest titles. So when the other guys say that their card will copy "everything", that may be true - providing that you can figure out the proper "copy adjustment" settings for everything. Good luck!

The differences go beyond the product itself. Software Support International is the company that began with the award winning Kracker Jax series of archival parameters. Our customer support system has earned industry praise, and we've established a reputation for honesty and integrity. A close look at the track record of the other guys will show just how deep our differences run. So when you're ready to get involved with the future of archival technology, pick RAMBOard - a product you can trust, from a company you can trust.

The RAMBOard
1541/1541C Version: $34.95
NEW **1541 II Version: $44.95**
1571 Version: $49.95

ATTN. C-128D Owners — The 1571 RAMBOard is for external drives only.
The RAMBOard is an optional Maverick accessory

ALL NEW

FasTrac/128 by Mike J. Henry

Look Who's Come Out Of The Basement

ALL NEW

At Software Support International, we've gained a reputation for providing Commodore owners with the products they need to get the most out of their computers. We've never hesitated to do whatever it took to provide you with the best software on the market. So when we decided to produce the ultimate 128 utility system, we went looking for one of the ultimate programmers.

We found him.

Mike J. Henry, the brilliant young programmer who was the driving force behind the "Basement Boys", the software team that created the phenomenal Fast Hack 'Em, has turned his considerable talents onto the 128. The result: FasTrac 128, the TOTAL utility system for your 128.

Here's a list of the major features found in FasTrac 128. ALL use both 40 and 80 column outputs and are PAL compatible for our overseas users. Read carefully -FasTrac 128 does some truly amazing things:

- **FasTrac 128 Disk Copy:** Single or dual drive · Copy with or without verify · Copy in 1541, 1581, or true 1571 formats · 1764-1750 RAM expansion support · 64K video RAM support · Uses the 128's additional memory.
- **FasTrac 128 File Copy:** Single or dual drive · File Copy between ANY two Commodore compatable Drives including the SFD-1001, MSD drives, hard drives, and others · Copy in 1541 or true 1571 formats · 1581 file copy with partition support · 1764-1750 RAM expansion support · 64K video RAM support · Uses the 128's additional memory.
- **FasTrac 128 M/L Monitor:** Go ANYwhere in memory · Access both main banks · Full scrolling in both directions · Includes scrolling DriveMon.
- **FasTrac 128 Directory Editor:** Edit and organize ANY standard directory · Edit 1541 or true 1571 formats · Edit 1581 directories with full partition support.
- **FasTrac 128 IBM ™ MFM Disk Copier:** Copy standard IBM formatted 360K 5.25" disks with your 1571 drive (required) · 1764-1750 RAM expansion support · 64K video RAM support · Uses the 128's extra memory to copy in fewer passes.
- **FasTrac 128 1581 Duplicator:** Single or dual drive · 1764-1750 RAM expansion support · 64K video RAM support · Uses the 128's additional memory. This is the fastest 1581 to 1581 copier ever created!

Quite a package, eh? We don't want to mislead you - FasTrac 128 is NOT for copying protected software. Our own Maverick ™ already has those bases more than covered. FasTrac 128 was designed to allow serious 128 users to get total control of their computers.

If you want to own the finest set of utilities ever made for the Commodore 128, we've just made it a lot easier - we've told you the name.....

Mike J. Henry's FasTrac/128
Only $34.95

ATTN. REGISTERED Maverick Owners ONLY: You may buy ONE (1) copy of FasTrac/128 for only $20.00
This offer is ONLY for orders placed with Software Support.

ALL NEW

THE 1581 TOOLKIT V2

If You've Been Waiting For A Sign, This Is It.

ALL NEW

Introducing the 1581 Toolkit Version 2, the newest incarnation of the best program you can buy for your 1581 disk drive. How good is it? Well, V1 received 4 1 2 of a possible 5 stars from INFO ™ magazine - and V2 is even better. What can it do for you? Picture using your 1581 with a:

- ★ **Fast Disk Copier**
- ★ **Fast File Copier**
- ★ **Byte Pattern Search**
- ★ **Partition Creator**
- ★ **Ultrafast Formatter**
- ★ **Track & Sector Editor**
- ★ **Directory Editor**
- ★ **Error Scanner**
- ★ **Relocatable Fast Loader**
- ★ **File Track & Sector Tracer**

And V2 adds many new or enhanced features, like the fact that both our single drive fast data copier and fast file copier now support the 1764-1750 RAM expansion units for super-fast one pass copies, or like our 64k video RAM support for 128 owners! And remember also that all of our 1581 Toolkit utilities use hyperfast read/write routines and, wherever appropriate, allow full access to partitions.

So whether you're thinking about buying a 1581 drive or you already own a 1581 drive, we guarantee you'll never really USE a 1581 drive until you've got your hands on the 1581 Toolkit.

NEW LOW PRICE:
THE 1581 TOOLKIT (3.5 disk) . . . . . NOW ONLY $24.95!
VERSION 1 OWNERS: Upgrade to V2 by Sending us your Original Toolkit V1 disk along with $9.95 plus S/H

Ever wish you knew more about your 1581? David Martin's book, "The 1581 DOS Reference Guide", is what you've been wishing for. Martin's invaluable resource holds over 100 pages of detailed information that took over a year of solid research to compile. This exhaustive manual will show you the inner workings of the 1581 as nothing else can. Order now, and we'll include some additional utilities like a machine language monitor with DriveMon - the perfect companion to The 1581 DOS Reference Guide!

THE 1581 DOS REFERENCE GUIDE / $14.95
SPECIAL OFFER: GET BOTH THE 1581 REFERENCE GUIDE AND THE 1581 TOOLKIT FOR ONLY $34.95

THE 1750 CLONE

Are You Overdrawn At The Memory Bank?

Ah, the venerable Commodore 64/128. Stock, it has better sound than an Atari ST. Better graphics than a CGA equipped IBM. And more memory than....

Uh-oh.

As powerful as the Commodore is, memory has always been its weak spot. Some brilliant programmers have found some ingenious ways to work within the computer's very limited available RAM, but the fact remains that you can only go so far with 64 or even 128K. But you can go MUCH further with 512K.

The bad news is that Commodore's own 1750 512K RAM Expansion Unit (REU) is expensive and almost impossible to find. The good news is, we did something about it.

We bought brand new Commodore 1764 REU's, which come with only 256K of RAM. Next, we installed a 256K upgrade which was custom engineered to our demanding specifications. Once modified, we tested each and every unit and warranted them to be free from defects. The final product is called the 1750 Clone, and it's all the room you'll ever need on a simple plug in cartridge.

Once on board, you'll have a whopping 512K of RAM - the SAME amount of memory found on the Amiga 500. Your Commodore will operate at advanced levels of performance that the original designers never even dreamed of! You'll be amazed at the enhanced capabilities of software that takes advantage of the 1750 Clone, programs like GEOS, PaperClip III, and our own Maverick, to name a few.

The 1750 Clone works EXACTLY like the original 1750. It will open the door on years of extended use from your Commodore as even newer, more powerful software appears on the horizon, software that requires the room the 1750 Clone can provide.

Twin Cities 128 magazine says they "can completely recommend the 1750 Clone." Once you see it work, you'll feel the same way. So don't buy a whole new computer just to get more memory. Get the 1750 Clone instead -and get another decade of satisfaction from your Commodore.

IMPORTANT NOTES - READ CAREFULLY

C-64/64c (but NOT C128/128D) owners MUST buy a heavy-duty power supply to use these units. The power supply is NOT included - it is available from us separately. If you ALREADY own a 1764 RAM cartridge, we can upgrade it for you. Your unit MUST be in perfect working order for us to upgrade it. The turnaround time on upgrades is approx. 2 weeks. It will NOT be necessary for you to purchase a new power supply - the one that came with your 1764 will still work fine.

THE 1750 CLONE ONLY $199.95
1764 UPGRADE ONLY $124.95

OLD

C-128 VIDEO RAM UPGRADES

For 128 Owners Who Refuse To Be Left Behind

When Commodore first released the new 128D, we got one, opened it up, and took a good look. It didn't take long to discover one MAJOR difference. The standard C-128 has just 16K of video RAM, while the newer 128D has 64K: 400% more! We knew that there were tremendous advantages to the extra RAM. Like being able to scroll through video memory or the potential for greatly enhanced color resolution. And, since Commodore had seen fit to make it a standard feature on all new 128D's, we knew it was only a matter of time before new software started taking advantage of the full 64K.

That time has arrived. Programs like BASIC 8, the BASIC 8 Toolkit, Spectrum 128, Sketchpad 128, and News Maker 128 have all been coded to utilize the full 64K of video RAM found on the 128D's. So if you've got a regular C-128 with only 16K of video RAM, you've got a problem. And we've got the solution.

You could upgrade on your own - but if thoughts of splattered solder and heat-damaged motherboards bother you, relax: we've developed a module that just plugs right in to your C- 128. No soldering, no hassles. Now your computer can have the same 64K video RAM as the new machines. And you'll be ready for whatever the future holds.

PLUG-IN 64K VIDEO RAM UPGRADE FOR C-128's

ONLY $49.95
Includes easy installation instructions

NEW LOW PRICE

KRACKER JAX VOLUMES 1-7

We Just Made A Good Thing Better - Without Lifting A Finger.

Kracker Jax, our ground breaking series of copy parameters, was always a superior product. When we made it, we made it right. So how can we improve it now? Easy. We slashed the price!

Each Volume of Kracker Jax allows you to make Unprotected versions of around 100 specific popular titles. No special knowledge or tools are required. Each Volume originally sold for $19.95. So if you wanted all 7 Volumes, it would have cost you $139.65. But now, you can buy each Volume for only $9.95 or, for you bargain hunters, you can buy **ALL 7 VOLUMES FOR ONLY $29.95!** That works out to a cost of only **$4.28** each!

We've also cut the price on The Shotgun II, one of the most powerful nibblers ever produced. Originally $14.95, you can now own it for only **$9.95!**

And just because there's a remote chance that it might be your birthday, we'll go one step further: Buy the Kracker Jax Volume 1 -7 package for **$29.95,** and we'll throw in The Shotgun II nibbler **FREE!** Quite a deal, huh? But if you want it, better hurry - supplies are limited. After all, nothing good lasts forever.

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Circle 17 on Reader Service card.

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DEALERS — WE HAVE THE SUPPORT YOU'RE LOOKING FOR!

COMMODORE CLINIC

Lou leaves; Ellen rules. Commodore Clinic's new columnist tackles readers' technical questions.

By ELLEN RULE

Q *My Sears SR-2000 printer connects directly to the disk drive with a Commodore serial cable, and the parallel cable connector and switch make it Epson-compatible. Would I benefit from using the Epson-compatible mode? And how do I use the parallel connector?*

—AL SWEENEY
CHICAGO, IL

A Many new printer owners start out using Commodore Emulation mode, since it's the easiest way to begin using your printer's options. As you gain confidence with your computing ability, you may want more control over your printer options, and you may wish to access the higher-resolution capabilities of the Epson mode (especially desirable for GEOS users).

In order for your Commodore computer to communicate with the Epson-compatible side of your printer, you need a Commodore-to-parallel printer interface (available from your local computer dealer or through the mail order houses that are advertised in this magazine).

I use Xetec's Super Graphix interface with my parallel printer, and I know that many Commodore users are quite satisfied with the MW-350 interface from MicroWorld. The switches on these units give you control over carriage-return and line-feed options, device number, and so on. An important setting is the 1525-emulate/transparent option, which lets you match the interface to your software's output. Once installed, the interface is "invisible" to the user; in other words, forget it's there until you need to control the options.

Q *I need a short machine language routine that locks the top line of the screen in place. I'd like to print anything on the top line, and it shouldn't flicker when the screen is scrolling.*

—GARRETT MONTANELLI
STOCKTON, CA

A I talked with QuantumLink's QTutor BRO, the head of Quantum Community College Computer Science Department, who confirmed that in order to accomplish this programming task, you need to utilize interrupt-driven routines. Jim Butterfield's *Machine Language for the Commodore 64, 128 and Other Commodore Computers* (published by Prentice-Hall) discusses interrupts in Chapter 7 and provides a sample exercise that displays text on the top line of the screen. You should be able to build on this exercise to create the code you describe.

If you need help with the material in Butterfield's book, the QuantumLink Community College uses the book in their machine language courses. You can check on-line in the QCC General Information Area or in the QCC Course Catalog for more details about this and other on-line courses.

Q *I own a 1350 mouse and the second (right) button does not work. What should I do? Also, I need a place to put my machine language programs in conjunction with Basic. When I look in the memory maps, it seems that all the memory is taken up except bit-map, which I need for graphics, and an "application program" area, which is too small ($1300–$1BFF).*

—JEFF SCRUGGS
BELLEVILLE, IL

A You're not alone in being unable to use the right-hand mouse button, since, according to an article on page 39 of the *Twin Cities 128 Compendium Book #1*, only the circuitry in the left button of the 1350 mouse is properly connected. The article, "Mouse Modifications" by Avonelle Lovhaug, describes how a qualified technician can install an inexpensive resistor in the mouse to activate the right button. A brief coding routine is included to demonstrate how to read it. The *Compendium* is a collection of articles from issues 1–18 of *Twin Cities 128—The Commodore 128 Journal* (PO Box 11578, Minneapolis, MN 55411).

As for your machine language problem, I can't tell you everything you need to know in the space available here, but there are several books that describe the idiosyncracies of using machine language on the 128. Most ML programmers I know seem proficient at tucking bits of code here and there in the 128's memory. SAM's *Commodore 128 Assembly Language Programming*, by Mark Andrews, describes several locations in RAM that, depending on your program's requirements, may be free for your use.

For example, in bank 0, the Basic and Kernal working storage is allocated from $0B00 to $1BFF. Included in this range are the Datassette buffer ($0B00–$0BFF), the 512-byte RS-232 serial buffer ($0C00–$0DFF), and the sprite definition area ($0E00–$0FFF), as well as the 2K segment ($1300–$1BFF) you mentioned. Try splitting up your code and putting it into areas not used by your program.

Other locations may also be utilized, such as the C-128's 40-column text display area ($0400–$07FF), which can be used for color-control information when the 128 is in High Resolution mode. Also, once you know how much room your Basic code and variable storage will consume, you can relocate the top of Basic to gain even more space. Bank switching between the 128's different memory configurations is yet another technique used by programmers to manipulate the 128's memory. Try experimenting with a combination of these techniques to find what works best for you.

Q *I typed in your Checksum program from the November issue. When I try to run the program, the computer informs me that I have an Out of Data error in line 30. I proofed line 30 from the listing several times, and there are no errors in typing on my part. What could be the problem?*

—RAOUL PHINCH
MEDFORD, MA

A It is unfortunate that the Checksum program is unintentionally misleading. Line 30 contains the in- ►

ALL NEW

MAVERICK ™ V4

PLEASE Don't Call Us The Best Copy Utility On The Market!

We've always been known as the best Commodore copy utility made. But that label just doesn't fit us anymore. Because Maverick is so much more than just a copy utility. Over its life span, Maverick has evolved into a total software management system capable of extending the abilities of your Commodore computer well beyond its original capacity.

Maverick V4 continues the evolutionary process that is transforming our original copy program into a series of dedicated modules, each component created by a master programmer, each designed to deal with a specialized task. The result is a program that creates an entire software management environment of which backing up protected software is only one part. Software Support, the company that has always pushed the Commodore further that it was ever designed to go, is proud to present Maverick V4. We've added several important new features and many dramatic enhancements to the Maverick platform. For example:

- RAMBOard™ NYBBLER: A MAJOR leap forward in protected backup capabilities, our exclusive new nybbler works with our own RAMBOard to AUTOMATICALLY shred some of the toughest protection schemes ever created! This combination of ingenious hardware and superb new software can handle many protection schemes that are untouchable with conventional nybblers alone.
- RAMBOard GCR TRACK EDITOR: This new feature, found ONLY in Maverick V4, works with RAMBOard to allow you to read, write, and even edit whole tracks at a time!
- 1581 SINGLE OR DUAL DRIVE FAST DATA COPIER: Now backup your data disks faster than ever before with your 1581 drive! 1764/1750 RAM expansion and 64K video RAM are supported!
- FILE, TRACK, & SECTOR TRACER: Identify, view, and edit any sector in any program file-fast!
- HIGH SPEED SEQUENTIAL FILE VIEWERS: Now you can view or print sequential files WITHOUT having to load the application that created those files! For example, view PaperClip™ files without waiting for PaperClip to load. File Viewers are the current rage in the IBM world -Software Support brings this advanced feature to your Commodore with the new Maverick V4!
- ENHANCED DIRECTORY EDITOR: Works with the 1541, the 1571, and now supports the 1581 disk drive! The ultimate tool for organizing your disks!
- ENHANCED TRACK & SECTOR EDITOR: Works with the 1541, the 1571 (in true double sided format), and now supports the 1581 disk drive!
- ENHANCED SECTOR MAP EDITOR: Now supports the true double sided format of the 1571 disk drive!
- ENHANCED PARAMETER MENU: Now supports two drives!
- ENHANCED BYTE PATTERN SCANNER: Perform high speed searches on 1541 disks and, now with true double sided format support, 1571 disks.
- MORE ALL-NEW PARAMETERS: Maverick V4 now includes over 450 parameters that either copy or entirely break the potentially destructive protection schemes of the world's newest and finest programs! Our parameters have always been the strongest on the market but, with our exclusive RAMBOard support, now they're more powerful than ever!

A turntable is just one component of a complete stereo system. And a copier, even the best one made, is just one module of a complete software management system. From this point on, we won't settle for just being known as having the best copier on the market. Once you see Maverick V4, you'll understand why.

THE NEW MAVERICK V4 -ONLY $34.95

NOW INCLUDES PARAMETER MODULES 1-7

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structions that read in the data, so that when it reaches an error in a Data statement when you run the program, you get the error response.

RUN's Associate Editor, Harold "Buzz" Bjornsen managed to convince former Technical Manager Lou Wallace to modify the Checksum program to take care of this problem. See page 51 for the new version—which will appear in every issue—and documentation explaining its use.

How many ways can the C-128 be modified? Also, I understand early models had a few bugs. What are they and how can I tell if my machine is an early model?

—JOHN T. BOORD
BRIMFIELD, IL

A Roy Lee, of Memory Management, Inc., a Commodore-authorized repair center in Wellesley, Massachusetts, told me only one upgrade to the C-128 originated at Commodore. The three-chip ROM upgrade, available for about $25 plus installation charges, corrected problems in the C-128 operating system. These bugs included round-off errors in the internal math package, a problem with negative-value relative coordinates on Basic 7.0 bit-mapped graphics commands, and the Q key, which printed only a lowercase q in Caps Lock mode.

Except for the Q-key problem, the bugs would not be noticeable to the nonprogrammer. So, if you press the Q key in Caps Lock mode that results in a lowercase q on the screen, then you probably own an early model of the C-128. Here's a one-line program that will fix the problem. Just enter it and run the program:

```
10 FAST:BANK15:FORJ=0 TO
   88:POKE6333+J,PEEK(64484+J):
   NEXT:POKE840,189:POKE841,24:
   POKE6395,209:SLOW
```

The popular 64K video display controller (VDC) RAM upgrade did not originate at Commodore, although it is built into Commodore's C-128D. The VDC upgrade increases display memory, enabling true multicolor graphics on the 80-column screen. It may also be used by RAM-disk utility programs designed to access this memory.

Third-party chips made for the 128's empty ROM socket include Basic 8 and 128 SuperChip, which—when installed by a qualified technician—provide instant access to the programs they contain when the control key is depressed at startup. ■

Ellen Rule, who is now a contributing editor for RUN, *becomes with this issue our new Commodore Clinic guru. In her spare time, she is employed as an R.N., lends expertise to user's groups and runs a business endeavor, Home Computer Resource.*

Do you have a problem or question about your Commodore computer system, software or programming? Just send your questions to Commodore Clinic, RUN Magazine, 80 Elm St., Peterborough, NH 03458. Queries are answered only through this column, and, due to the volume of mail, only questions likely to appeal to the majority of our readers can be published.

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RUN's Checksum & Program Typing Hints

TYPE IN *RUN*'S CHECKSUM, which serves for both the C-64 and for the C-128 in either 40- or 80-Column mode, and save it to disk before running it. When typing in a program from *RUN*, first load and run *RUN*'s latest version of the Checksum program, which contains a new feature explained below. The screen will display a SYS number (49152 for the C-64; 3328 for the C-128) that deactivates and reactivates the Checksum. Always disable *RUN*'s Checksum before attempting to run another program. Note: You can abbreviate Basic keywords; spaces affect the checksum only when within quotes; and the order of characters affects the checksum.

When you press return after typing in a program line, a one-, two-, or three-digit number from 0 to 255 appears in the home position. If this number matches the checksum value in the program listing, the line as you typed it is correct. If the number that appears doesn't match the checksum value, compare the line with the magazine listing to find your error. Then move the cursor back up to the line and make your corrections. Now, after you press return, the correct checksum value should appear. Continue entering the listing until all the lines have been correctly typed. Then deactivate *RUN*'s Checksum, using the appropriate SYS number, and save the finished program.

We sometimes get letters and phone calls from new readers who have typed in the Checksum program for the first time. They are confused by the "Out of Data Error in Line 30" message that appears when they try to run the Checksum program. Understandably, they compare line 30 of the listing with line 30 as they typed it in, and cannot find anything wrong. The message unintentionally misleads them into thinking the error is in line 30, whereas the typing mistake is actually somewhere in one of the Data statements in lines 190–350.

So, we've added a new feature to the Checksum program that alerts readers to the number of the Data statement line in the Checksum program where an error has actually been made. **Note that this feature works *only* on the Checksum program itself, and not on any other program listing in *RUN*.**

After you've entered and saved the Checksum program to disk, run it. If you've made any errors in any of the Data statements, the program will give you a specific line number. Find the mistake, correct it, press return, save the program and run it again. Repeat this procedure until the Checksum program runs flawlessly.

Control Characters Demystified

All the graphics and control characters in the listings in *RUN* have been translated into understandable key combinations. They are the instructions you see inside the curly braces. For example, {SHIFT L} means you hold down the shift key while you press the L key once. You do *not* type in the curly braces. What appears on the screen will look quite different from what is designated inside the braces. Here are some more examples:

{22 SPACES}—press the space bar 22 times.

{SHIFT CLR}—hold down the shift key and press the clr-home key once.

{2 CRSR DNs}—press the cursor-down key twice.

{CTRL 1}—hold down the control key and press the 1 key.

{COMD T}—hold down the Commodore logo key and press the T key.

{5 LB.s}—press the British pound key (£, *not* #) five times.

Refer to the following paragraphs for any other Error messages you get from running any program listing in *RUN*.

Other Error Messages

Having heard from many users over the years about their difficulties with typing in listings, we've identified a few recurring problems that plague many people but are easy to fix. So read on and see if your problem is one of these.

- You get an "Out of Data in Line xxx" message. This means that a program line was reading from Data statements and reached the end of the data before it was done reading. There are two possible problems.

One might be with the program line that reads the data, usually a For-Next loop. Make sure you have the proper values for the loop, because if, for example, the listing has a loop of 0 to 150, and you've typed 0 to 160, you'll get the Out of Data message. If the loop is correct, then the problem lies in the Data statements themselves. One possibility is that you omitted a whole line of data. That's easy enough to find and correct. It's more likely that you've skipped one or more individual data items or typed in a period instead of a comma, which causes two data values to be read as one number. Check your typing carefully against the listing. Using *RUN*'s Checksum program when you type in listings from the magazine should help in this case.

- You get an "Illegal Quantity Error in Line xxx" message. This means you've read a number from a Data statement and tried to poke it into a memory address. The error occurs because the number is larger than 255 (the largest value a memory address can contain), which means that somewhere in your Data statements you've made an error by typing in a number larger than 255. Again, this is easy to check for and correct. First look in your Data statements for a number larger than 255. You might have added an extra digit, or perhaps you ran two numbers together (23456 instead of 234,56).
- You get a "Syntax Error in Line xxx" message. This could be almost anything. What it tells you is that there is something wrong in the indicated line. Usually you've misspelled a Basic keyword or omitted some required character. List the line and examine it carefully.
- You get an "Error in Data" message. This occurs in programs that add up all the data as read, and, when finished, compares that sum with what it should be if the data were typed in correctly. If it isn't the same, it means an error somewhere in typing the Data statements. Go back and check the data carefully. Correct the mistake(s), save the new version and try again.
- Finally, we urge everyone who intends to type in one of our listings to use *RUN*'s Checksum program, which will help you avoid every mistake we've mentioned above, except that it won't detect the omission of a line. R

Listing. *RUN*'s Checksum program. This program is available on *RUN*'s BBS for users to download.

```
10 REM RUN'S CHECKSUM 64/128 - BOB KODADEK
20 MO=128:SA=3328:IF PEEK(4096)THEN MO=64:SA=49152
30 I=0:CK=0:CH=0:LN=190
40 FOR K=0 TO 16
50 FOR J=1 TO 10:READ B:IF B>255 THEN GOTO 170
60 CH=CH+B:POKE SA+I,B:I=I+1:NEXT
70 READ LC
80 IF LC<>CH THEN GOTO 170
90 CH=0:LN=LN+10
100 NEXT K
110 POKESA+11,240:POKESA+111,38:POKESA+140,234
120 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":PRINT
130 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO=128 THEN 1
    60
140 POKESA+13,124:POKESA+15,165:POKESA+25,124:POKESA+2
    6,165
150 POKESA+39,20:POKESA+41,21:POKESA+123,205:POKESA+12
    4,189
160 POKESA+4,INT(SA/256):SYS SA:NEW
170 PRINT"YOU HAVE A DATA ERROR IN LINE ";LN;"!":END
180 REM DO NOT CHANGE THESE DATA STATEMENTS!
190 DATA 120,162,24,160,13,173,4,3,201,24,884
200 DATA 208,4,162,13,160,67,142,4,3,140,903
210 DATA 5,3,88,96,32,13,67,152,72,169,697
220 DATA 0,141,0,255,133,176,133,180,166,22,1206
230 DATA 164,23,134,167,132,168,170,189,0,2,1149
240 DATA 240,58,201,48,144,7,201,58,176,3,1136
250 DATA 232,208,240,189,0,2,240,42,201,32,1386
260 DATA 208,4,164,180,240,31,201,34,208,6,1276
270 DATA 165,180,73,1,133,180,230,176,164,176,1478
280 DATA 165,167,24,125,0,2,133,167,165,168,1116
290 DATA 105,0,133,168,136,208,239,232,208,209,1638
300 DATA 169,42,32,210,255,165,167,69,168,170,1447
310 DATA 169,0,32,50,142,169,32,32,210,255,1091
320 DATA 32,210,255,169,13,32,210,255,104,168,1448
330 DATA 96,104,170,24,32,240,255,104,168,96,1289
340 DATA 56,32,240,255,138,72,152,72,24,162,1203
350 DATA 0,160,0,32,240,255,169,42,208,198,1304
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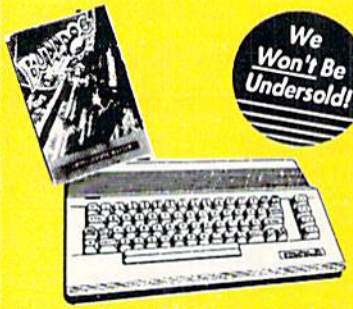

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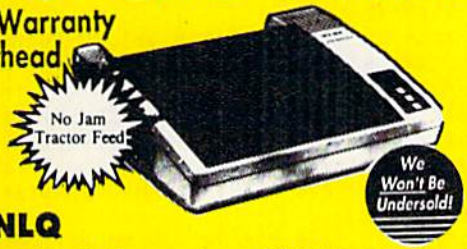

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From p. 28.

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84 GOSUB 186:IF X$=UP$ THEN CR=
   CR-2:IF CR<Ø THEN CR=MR
                          :REM*123
86 IF X$=" " THEN CR=MR:REM*113
88 NEXT:WINDOW 17,Ø,WS+1,FC+4:P
   RINT CS$GR$CHR$(7):X=1:GOTO
   26Ø                    :REM*19Ø
9Ø GOSUB 72:A$="":GOSUB 176:IF
   AR THEN 96             :REM*167
92 GOSUB 422:IF AR THEN DB$="":
   MR=Ø:GOTO96            :REM*214
94 GOSUB 436              :REM*198
96 GOTO 6Ø                :REM*228
98 GOSUB 72:FOR I=1 TO 16:FE$(I
   )="":FT$(I)="":FS%(I)=Ø:NEXT
   :FC=Ø                  :REM*162
1ØØ WINDOW 4Ø,1,62,3,1:GOSUB 58
   Ø                      :REM*192
1Ø2 WINDOW 42,2,61,2:PRINT RD$"
   {SHFT H}OW MANY FIELDS? ";
                          :REM*167
1Ø4 A$=MID$(STR$(FC),2):IF FC=Ø
    THEN A$=""            :REM*39
1Ø6 L=2:FL=1:GOSUB 6:FC=A:IF AR
   =1 THEN 6Ø             :REM*175
1Ø8 IF FC=Ø OR FC>16 THEN 98
                          :REM*66
11Ø IF FE$(1)="" THEN WINDOW 4Ø
   ,5,63,13,1:GOSUB58Ø    :REM*61
112 FOR F=1 TO FC:GOSUB154
                          :REM*114
114 A$=FE$(F):PRINT HM$TAB(6)A$
   HM$TAB(6);:L=1Ø:FL=Ø:GOSUB
   6:FE$(F)=A$            :REM*131
116 IF AR AND F=1 THEN 1Ø2:ELSE
    IF AR THEN F=F-1:GOSUB 154
   :GOTO 128              :REM*125
118 IF A$="" THEN 114     :REM*23
12Ø A$=MID$(STR$(FS%(F)),2):IF
   FS%(F)=Ø THEN A$="":REM*144
122 PRINT HM$CR$CR$TAB(6);:L=2:
   FL=1:GOSUB 6:IF AR THEN 114
                          :REM*244
124 FS%(F)=A:IF A>Ø AND A<48 TH
   EN 128                 :REM*145
126 A$="{SHFT M}INIMUM SIZE IS
   1, MAXIMUM SIZE IS 47!":GOS
   UB186:GOSUB154:GOTO12Ø
                          :REM*92
128 A$=FT$(F):PRINT HM$CR$CR$CR
   .$CR$TAB(16);:L=1:FL=3:G$="{
   SHFT T}{SHFT L}{SHFT N}{SHF
   T U}":GOSUB 6          :REM*119
13Ø FT$(F)=A$:IF AR THEN 12Ø
                          :REM*144
132 IF NOT(A$="{SHFT L}" AND FS
   %(F)<>1) THEN 136      :REM*8
134 A$="{SHFT L}OGICAL TYPE MUS
   T HAVE A SIZE OF 1.":GOSUB
   186:GOSUB154:GOTO12Ø
                          :REM*214
136 GOSUB 214:NEXT        :REM*13
138 MR=Ø:A$="MY DB":GOSUB 176:I
   F AR THEN 1ØØ          :REM*22Ø
14Ø IF RL>255 THEN A$="{SHFT M}
   AXIMUM TOTAL FIELD SIZE IS
   255!":GOSUB 186:GOTO 1Ø2
                          :REM*252
142 WINDOW Ø,22,19,24,1 :REM*14
144 GOSUB 412:SCRATCH (DB$)+".D
   BM":IF DS>1 THEN GOSUB 168
                          :REM*47
146 GOSUB 43Ø:GOSUB15Ø:FOR I=1
   TO FC:R$(I)="":NEXT :REM*31
148 FOR CR=2Ø TO Ø STEP -1:GOSU
   B 458:NEXT:DCLOSE:I1=1:I2=Ø
   :GOTO 6Ø               :REM*161
15Ø P%(1)=1:IF FC>1 THEN FORI=2
    TO FC:P%(I)=P%(I-1)+FS%(I-
   1)+1:NEXT              :REM*75
152 RETURN                :REM*39
154 WINDOW 41,6,62,12,1 :REM*18
156 PRINT RD$CHR$(2)"{6 SPACEs}
   {SHFT F}IELD #"LEFT$(STR$(F
   )+"{8 SPACEs}",9)CHR$(13Ø)
                          :REM*113
158 WINDOW 42,8,62,12   :REM*33
16Ø PRINT RD$"{SHFT N}AME: "GR$
   RV$LEFT$(FE$(F)+SP$,1Ø)
                          :REM*187
162 PRINT CR$RD$"{SHFT S}IZE: "
   GR$RV$LEFT$(MID$(STR$(FS%(F
   )),2)+SP$,2)           :REM*16
164 PRINT CR$RD$"{SHFT T}YPE ({
   SHFT T}/{SHFT U}/{SHFT N}/{
   SHFT L}): "GR$RV$LEFT$(FT$(
   F)+SP$,1);             :REM*144
166 RETURN                :REM*53
168 A$="DISK ERROR: "+GR$+DS$+R
   D$:GOSUB 186:RETURN:REM*21Ø
17Ø GOSUB 212:WINDOW Ø,22,11,24
   ,1:GOSUB 58Ø           :REM*114
172 CHAR 1,2,1,RD$+"ABORT? ":A$
   ="":L=1:FL=2:GOSUB 6:IF A$=
   "" THEN 172            :REM*171
174 GOTO 2Ø4              :REM*249
176 WINDOW 4Ø,15,66,17,1:GOSUB5
   8Ø                     :REM*198
178 WINDOW 42,16,64,16:PRINTRD$
   "FILENAME: ";          :REM*151
18Ø L=12:FL=Ø:GOSUB 6:IF A$=""
   THEN AR=1              :REM*1ØØ
182 IF AR=Ø THEN DB$=A$:REM*224
184 RETURN                :REM*71
186 WINDOW Ø,22,LEN(A$)+22,24,1
   :GOSUB58Ø:WINDOW 2,23,LEN(A
   $)+21,23               :REM*224
188 PRINTRD$A$"{3 SPACEs}PRESS
   ANY KEY..."GR$;:GETKEY X$
                          :REM*8Ø
19Ø WINDOW Ø,21,LEN(A$)+22,24,1
   :RETURN                :REM*94
192 IF ER<>5 THEN GOTO 198
                          :REM*1Ø3
194 FOR WW=1 TO 15:DCLOSE #(WW)
   :NEXT:A$="TURN ON DISK DRIV
   E!"                    :REM*136
196 GOSUB 186:AR=1:RESUME NEXT
                          :REM*2Ø8
198 A$=RD$+"ERROR: "+GR$+ERR$(E
   R):GOSUB 186:RESUME 6Ø
                          :REM*2Ø4
2ØØ GOSUB 212:WINDOW Ø,22,15,24
   ,1:GOSUB58Ø            :REM*2Ø4
2Ø2 CHAR 1,2,1,RD$+FL$+"{SHFT P
   }LEASE WAIT! ":RETURN
                          :REM*19Ø
2Ø4 PRINT CS$:FOR WW=228 TO 231
   :POKE WW,WS%(WW-228):NEXT:C
   HAR 1,Ø,Ø,"":RETURN:REM*138
2Ø6 GOSUB 212:WINDOW Ø,22,12,24
   ,1:GOSUB58Ø            :REM*32
2Ø8 CHAR 1,2,1,RD$+"DELETE? ":A
   $="":L=1:FL=2:GOSUB 6:IF A$
   ="" THEN 2Ø8           :REM*61
21Ø GOTO 2Ø4              :REM*28
212 FOR WW=228 TO 231:WS%(WW-22
   8)=PEEK(WW):NEXT:RETURN
                          :REM*181
214 RL=1:FOR I=1 TO FC:RL=RL+FS
   %(I)+1:NEXT:GOSUB 212
                          :REM*188
216 A$="RECORD SIZE:"+GR$+STR$(
   RL):WINDOW 4Ø,19,59,21:GOSU
   B 58Ø                  :REM*119
218 PRINT RD$HM$CR$TAB(2)A$GR$
                          :REM*162
22Ø FOR WW=228 TO 231:POKE WW,W
   S%(WW-228):NEXT:RETURN
                          :REM*1
222 IF DB$="" THEN A$="NO DATAB
   ASE OPEN!":GOSUB 186:GOTO 6
   Ø                      :REM*138
224 GOSUB 2ØØ:GOSUB 43Ø :REM*73
226 X=Ø:FOR I=MR TO 1 STEP -1:I
   F DE%(I) THEN X=I:I=MR
                          :REM*216
228 NEXT:IF X=Ø THEN 24Ø:REM*89
23Ø IF X=MR THEN ID%(MR)=Ø:MR=M
   R-1:GOTO 226           :REM*21Ø
232 P=1:DO UNTIL ID%(P)=X:P=P+1
   :LOOP:FOR I=P TO MR:ID%(I)=
   ID%(I+1):NEXT          :REM*122
234 J=1:DO UNTIL ID%(J)=MR:J=J+
   1:LOOP:ID%(J)=X:DE%(X)=DE%(
   MR):DE%(MR)=Ø          :REM*12
236 FOR I=1 TO FC:RECORD#1,MR,P
   %(I):GOSUB 2           :REM*92
238 RECORD#1,X,P%(I):RECORD#1,X
   ,P%(I):PRINT#1,A$:NEXT:MR=M
   R-1:GOTO 226           :REM*116
24Ø DCLOSE:GOSUB 2Ø4:GOTO 6Ø
                          :REM*82
242 L=Ø:R=MR+1:V$=LEFT$(V$+SP$,
   2Ø)                    :REM*86
244 P=INT((R-L)/2+.5)+L:IF P<L
   OR P>R OR R-L<2 THEN 254
                          :REM*21
246 RECORD#1,ID%(P),P%(I1):GOSU
   B 2:X$=LEFT$(A$+SP$,15)
                          :REM*1Ø5
248 IF I2 THEN RECORD#1,ID%(P),
   P%(I2):GOSUB 2:X$=X$+LEFT$(
   A$+SP$,5)              :REM*2Ø5
25Ø IF V$>X$ THEN L=P:GOTO 244
                          :REM*181
252 IF V$<X$ THEN R=P:GOTO 244
                          :REM*255
254 RETURN                :REM*141
256 IF DB$="" THEN A$="{SHFT N}
   O DATABASE OPEN!":GOSUB 186
   :GOTO 6Ø               :REM*34
258 GOSUB 266:X=Ø         :REM*241
26Ø R=Ø:C=Ø:W=15:MU=3:GOSUB554
                          :REM*22Ø
262 ON X GOTO 76,27Ø      :REM*145
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264 DCLOSE U(DR):GOTO 6Ø
                        :REM*253
266 WINDOW Ø,Ø,79,24,1:GOSUB43Ø
    :WS=Ø:FOR I=1 TO FC:IF FS%(
    I)>WS THEN WS=FS%(I)
                        :REM*24Ø
268 NEXT:WS=WS+13+18:WINDOW 17,
    Ø,WS+1,FC+3:RETURN :REM*117
27Ø WINDOW 17,Ø,58,FC+7,1:GOSUB
     58Ø:WINDOW 18,1,57,FC+7
                        :REM*24
272 PRINT RD$" {SHFT F}IELD {SH
    FT N}AME"TAB(2Ø)"{SHFT S}IZ
    E"TAB(29)"{SHFT T}YPE":PRIN
    T GR$               :REM*43
274 FOR I=1 TO FC:PRINT " "FE$(
    I)TAB(2Ø)FS%(I)TAB(27);:A$=
    "{SHFT A}LPHANUMERIC"
                        :REM*71
276 IF FT$(I)="{SHFT N}" THEN A
    $="{SHFT N}UMERIC"  :REM*81
278 IF FT$(I)="{SHFT L}" THEN A
    $="{SHFT L}OGICAL"  :REM*61
28Ø IF FT$(I)="{SHFT U}" THEN A
    $="{SHFT F}ORCE {SHFT U}/{S
    HFT C}"             :REM*132
282 PRINT A$:NEXT:PRINT CR$RD$T
    AB(5)"{SHFT D}ATABASE CONTA
    INS"GR$MR;RD$"RECORDS"
                        :REM*132
284 PRINT CR$RD$TAB(5)"{SHFT I}
    NDEX: ";:IF I1 THEN PRINT G
    R$FE$(I1);          :REM*59
286 IF I2 THEN PRINT RD$"+"GR$F
    E$(I2)              :REM*89
288 A$=LA$+LA$:GOSUB 186:WINDOW
     17,Ø,58,FC+7,1:X=2:GOTO 26
    Ø                   :REM*19Ø
29Ø IF DB$="" THEN A$="NO DATAB
    ASE OPEN!":GOSUB 186:GOTO 6
    Ø                   :REM*78
292 GOSUB 266:GOSUB 58Ø:CR=1:GO
    SUB356:X=Ø          :REM*16
294 R=Ø:C=Ø:W=15:MU=2:GOSUB554
                        :REM*2Ø7
296 ON X GOTO 3ØØ,324,Ø,37Ø,374
    ,396,378,382,Ø,338,386,298
                        :REM*86
298 DCLOSE U(DR):GOTO6Ø  :REM*2
3ØØ IF MR=Ø THEN SOUND 1,7ØØ,2Ø
    :X=1:GOTO 294       :REM*185
3Ø2 GOSUB 368:I1$=LEFT$(R$(I1),
    15):IF I2 THEN I2$=LEFT$(R$
    (I2),5)             :REM*191
3Ø4 FOR I=1 TO FC:A$=R$(I):FL=I
    NSTR("{SHFT N}{SHFT L}X{SHF
    T U}",FT$(I))       :REM*148
3Ø6 L=FS%(I):CHAR1,Ø,I-1,"":GOS
    UB 6:R$(I)=A$:IF AR>ØANDI>1
     THEN I=I-2:GOTO31Ø:REM*186
3Ø8 IF AR>Ø AND I=1 THEN GOSUB
    17Ø:I=I-1:IF A$="{SHFT Y}"
    THEN 322            :REM*87
31Ø NEXT:GOSUB 458      :REM*25Ø
312 IF LEFT$(R$(I1),15)=I1$ AND
     (LEFT$(R$(I2),5)=I2$ OR I2
    =Ø) THEN 322        :REM*187
314 GOSUB 2ØØ:CX=ID%(CR) :REM*Ø
316 FOR I=CR TO MR:ID%(I)=ID%(I
    +1):NEXT:MR=MR-1:GOSUB 39Ø:
    MR=MR+1             :REM*251
318 FOR I=MR TO P STEP -1:ID%(I
    )=ID%(I-1):NEXT:ID%(P)=CX
                        :REM*215
32Ø SV=1:GOSUB 2Ø4      :REM*53
322 GOSUB 356:X=1:GOTO 294
                        :REM*2
324 CX=CR:CR=MR+1:ID%(CR)=CR:DE
    %(CR)=Ø:GOSUB 356:FOR I=1 T
    O FC:R$(I)="":NEXT :REM*198
326 FOR I=1 TO FC:A$=R$(I):FL=I
    NSTR("{SHFT N}{SHFT L}X{SHF
    T U}",FT$(I))       :REM*13Ø
328 L=FS%(I):CHAR1,Ø,I-1,"":GOS
    UB 6:R$(I)=A$:IF AR>ØANDI>1
     THEN I=I-2:GOTO332:REM*211
33Ø IF AR>Ø AND I=1 THEN GOSUB
    17Ø:I=I-1:IF A$="{SHFT Y}"
    THEN CR=CX:GOTO 336  :REM*Ø
332 NEXT:GOSUB 39Ø:MR=MR+1:FOR
    I=MR TO P STEP -1:ID%(I)=ID
    %(I-1):NEXT         :REM*255
334 ID%(P)=MR:DE%(MR)=Ø:CR=P:GO
    SUB458:SV=1         :REM*195
336 GOSUB 356:X=2:GOTO 294
                        :REM*4Ø
338 IF MR<2 THEN 354    :REM*241
34Ø IF I1=Ø THEN SOUND 1,7ØØ,2Ø
    :GOTO 354           :REM*6
342 CX=CR:WINDOW Ø,22,39,24,1:G
    OSUB 58Ø:A$=""      :REM*195
344 WINDOW 2,23,38,23:PRINT CR$
    RD$"SEARCH STRING: ";:L=2Ø:
    FL=Ø:GOSUB 6        :REM*154
346 IF AR OR A$="" THEN 35Ø
                        :REM*225
348 V$=A$:GOSUB 242:CR=P:IF CR>
    MR THEN CR=MR       :REM*7Ø
35Ø WINDOW Ø,22,39,24,1:REM*238
352 IF CR<>CX THEN GOSUB 356
                        :REM*13Ø
354 X=1Ø:GOTO 294       :REM*2Ø6
356 WINDOW 19,1,WS,FC+1 :REM*52
358 PRINT RD$"{SHFT R}ECORD"GR$
    STR$(CR)RD$" OF"GR$STR$(MR)
    " "                 :REM*217
36Ø IF DE%(ID%(CR)) THEN PRINT
    FL$"* {SHFT D}ELETED *":ELS
    E PRINT LEFT$(SP$,11)
                        :REM*46
362 WINDOW 19,3,WS,FC+3:FOR I=1
     TO FC              :REM*81
364 IF CR>ØANDCR<=MR THEN RECOR
    D#1,ID%(CR),P%(I):GOSUB 2:R
    $(I)=A$:ELSE R$(I)=""
                        :REM*97
366 PRINT RD$LEFT$(FE$(I)+":"+S
    P$,12)RV$GR$LEFT$(R$(I)+SP$
    ,FS%(I)):NEXT       :REM*77
368 WINDOW 19+12,3,WS,FC+3:PRIN
    T CR$UP$;:RETURN    :REM*64
37Ø IF CR<MR AND MR>Ø THEN CR=C
    R+1:GOSUB 356:ELSE SOUND 1,
    7ØØ,2Ø              :REM*255
372 X=4:GOTO 294        :REM*183
374 IF CR>1 AND MR>Ø THEN CR=CR
    -1:GOSUB 356:ELSE SOUND 1,7
    ØØ,2Ø               :REM*164
376 X=5:GOTO 294        :REM*2ØØ
378 IF MR>Ø THEN CR=1:GOSUB 356
    :ELSE SOUND 1,7ØØ,2Ø
                        :REM*234
38Ø X=7:GOTO 294        :REM*198
382 IF MR>Ø THEN CR=MR:GOSUB 35
    6:ELSE SOUND 1,7ØØ,2Ø
                        :REM*141
384 X=8:GOTO 294        :REM*223
386 IF MR=Ø THEN SOUND 1,7ØØ,2Ø
    :X=11:GOTO 294      :REM*51
388 DE%(ID%(CR))=XOR(DE%(ID%(CR
    )),1):GOSUB356:SV=1:X=11:GO
    TO 294              :REM*149
39Ø IF I1=Ø THEN P=MR+1:RETURN
                        :REM*253
392 V$=LEFT$(R$(I1)+SP$,15):IF
    I2 THEN V$=V$+LEFT$(R$(I2)+
    SP$,5)              :REM*76
394 GOSUB 242:RETURN    :REM*93
396 IF MR<2 THEN 41Ø    :REM*244
398 CX=CR:WINDOW Ø,22,17,24,1:G
    OSUB 58Ø:A$=""      :REM*193
4ØØ WINDOW 2,23,16,23:PRINT CR$
    RD$"{SHFT R}ECORD #: ";:L=4
    :FL=1:GOSUB 6       :REM*224
4Ø2 IF AR THEN A=CR:GOTO 4Ø6
                        :REM*187
4Ø4 IF A<1 OR A>MR OR INT(A)<>A
     THEN SOUND 1,1ØØØ,5:GOTO 4
    ØØ                  :REM*192
4Ø6 CR=A:WINDOW Ø,22,17,24,1
                        :REM*2Ø8
4Ø8 IF CR<>CX THEN GOSUB 356
                        :REM*2Ø2
41Ø X=6:GOTO 294        :REM*227
412 DCLOSE U(DR):SCRATCH (DB$)+
    ".DAT",U(DR):IF DS>19 THEN
    GOSUB 168:GOTO 42Ø :REM*252
414 DOPEN#1,(DB$)+".DAT",U(DR),
    W:IF DS THEN GOSUB 168:GOTO
     42Ø                :REM*212
416 PRINT#1,RL;CR$MR;CR$FC:FORI
    =1 TO FC:PRINT#1,FE$(I)CR$F
    T$(I)CR$FS%(I):NEXT :REM*6Ø
418 IF MR THEN FOR I=1 TO MR:PR
    INT#1,DE%(I):NEXT   :REM*79
42Ø DCLOSE U(DR):RETURN:REM*131
422 DCLOSE U(DR):DOPEN#1,(DB$)+
    ".DAT",U(DR):IF DS THEN GOS
    UB168:AR=1:GOTO 428:REM*115
424 INPUT#1,RL,MR,FC:FORI=1 TO
    FC:INPUT#1,FE$(I),FT$(I),FS
    %(I):NEXT:GOSUB 15Ø:REM*23Ø
426 IF MR THEN FOR I=1 TO MR:GO
    SUB 2:DE%(I)=VAL(A$):NEXT
                        :REM*98
428 DCLOSE U(DR):RETURN:REM*155
43Ø DCLOSE U(DR):DOPEN#1,(DB$)+
    ".DBM",L(RL),U(DR)  :REM*33
432 IF DS THEN GOSUB 168:DCLOSE
    :AR=1               :REM*33
434 RETURN              :REM*66
436 DCLOSE U(DR):DOPEN#1,(DB$)+
    ".NDX",U(DR)        :REM*8Ø
438 IF DS AND DS<>62 THEN GOSUB
     168:GOTO 446       :REM*69
44Ø GOSUB 2ØØ:FOR I=1 TO MR:ID%
    (I)=I:NEXT:I1=Ø:I2=Ø:IF DS= ►
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    62 THEN 446          :REM*138
442 INPUT#1,I1,I2:IF MR<2 THEN
    446                  :REM*183
444 I=Ø:DO UNTIL ST:I=I+1:GOSUB
     2:ID%(I)=VAL(A$):LOOP
                         :REM*94
446 GOSUB 2Ø4:DCLOSE U(DR):RETU
    RN                   :REM*76
448 DCLOSE U(DR):SCRATCH (DB$)+
    ".NDX"               :REM*1Ø6
45Ø DOPEN#1,(DB$)+".NDX",U(DR),
    W:IF DS THEN GOSUB 168:GOTO
     456                 :REM*79
452 PRINT#1,I1:PRINT#1,I2:IF MR
    =Ø THEN 456          :REM*118
454 FORI=1 TO MR:PRINT#1,MID$(S
    TR$(ID%(I)),2):NEXT:REM*158
456 DCLOSE U(DR):RETURN:REM*191
458 GOSUB 2ØØ            :REM*15
46Ø FOR WW=1 TO FC:RECORD#1,ID%
    (CR),P%(WW):PRINT#1,R$(WW)
                         :REM*122
462 RECORD#1,ID%(CR),P%(WW):NEX
    T:GOSUB2Ø4:RETURN    :REM*251
464 FOR L=1 TO MR+1:ID%(L)=L:NE
    XT:L=1:R=MR:P=2:DO:IF R-L>1
    Ø THEN BEGIN         :REM*157
466 V$=A$(ID%(R)):I=L-1:J=R:DO
                         :REM*218
468 DO:I=I+1:LOOP UNTIL A$(ID%(
    I))>=V$              :REM*34
47Ø DO:J=J-1:LOOP UNTIL A$(ID%(
    J))<=V$              :REM*254
472 T=ID%(I):ID%(I)=ID%(J):ID%(
    J)=T:LOOP UNTIL J<=I:REM*29
474 ID%(J)=ID%(I):ID%(I)=ID%(R)
    :ID%(R)=T            :REM*158
476 IF (I-L)>(R-I) THEN S%(P)=L
    :S%(P+1)=I-1:L=I+1:ELSE S%(
    P)=I+1:S%(P+1)=R:R=I-1
                         :REM*4
478 P=P+2:BEND:ELSE P=P-2:L=S%(
    P):R=S%(P+1):BEND    :REM*29
48Ø LOOP UNTIL P=Ø       :REM*1Ø1
482 FOR WW=2 TO MR:T=ID%(WW):CV
    $=A$(T):LS=WW        :REM*83
484 DO WHILE (LS>=1) AND (A$(ID
    %(LS-1)) > CV$):ID%(LS)=ID%
    (LS-1):LS=LS-1:LOOP:REM*2Ø4
486 ID%(LS)=T:NEXT:RETURN
                         :REM*189
488 IF DB$="" THEN A$="{SHFT N}
    O DATABASE OPEN!":GOSUB 186
    :GOTO 6Ø             :REM*57
49Ø MC(6)=FC+1:MU$(6,Ø)="{SHFT
    P}RIMARY {SHFT F}IELD":FOR
    I=1 TO FC:MU$(6,I)=FE$(I):N
    EXT                  :REM*121
492 MU$(6,I)=RD$+"{SHFT Q}{SHFT
     U}{SHFT I}{SHFT T}"+GR$:R=
    Ø:W=18:C=4Ø:MU=6:X=Ø:GOSUB
    554                  :REM*5
494 IF X=FC+1 THEN 6Ø    :REM*226
496 J1=X:MU$(6,Ø)="{SHFT S}ECON
    DARY FIELD":J=1      :REM*54
498 FOR I=1 TO FC:IF J1<>I THEN
     MU$(6,J)=FE$(I):J=J+1
                         :REM*243
5ØØ NEXT:MU$(6,J)=RD$+"{SHFT N}
    {SHFT O}{SHFT N}{SHFT E}"+G
    R$:MU$(6,J+1)=RD$+"{SHFT Q}
    {SHFT U}{SHFT I}{SHFT T}"+G
    R$:X=Ø:GOSUB 554     :REM*51
5Ø2 J2=X:IF X=MC(6)-1 THEN J2=Ø
                         :REM*1Ø1
5Ø4 IF X=MC(6) THEN 6Ø :REM*156
5Ø6 I1=J1:I2=J2:IF MR<2 THEN ID
    %(1)=1:GOSUB 448:GOTO 6Ø
                         :REM*3Ø
5Ø8 GOSUB 2ØØ:GOSUB 43Ø:REM*1Ø8
51Ø FOR I=1 TO MR:RECORD#1,I,P%
    (I1):GOSUB 2:A$(I)=LEFT$(A$
    ,15)                 :REM*73
512 IF J2 THEN RECORD#1,I,P%(J2
    ):GOSUB 2:A$(I)=A$(I)+LEFT$
    (A$,5)               :REM*169
514 NEXT:DCLOSE:GOSUB 464:GOSUB
     448                 :REM*37
516 FOR I=1 TO MR:A$(I)="":NEXT
    :GOSUB 2Ø4:GOTO 6Ø   :REM*54
518 IF DB$="" THEN A$="NO DATAB
    ASE OPEN!":GOSUB 186:GOTO 6
    Ø                    :REM*85
52Ø IF MR=Ø THEN A$="DATABASE I
    S EMPTY!":GOSUB 186:GOTO 6Ø
                         :REM*212
522 I1$=DB$:A$="":GOSUB 176:DB$
    =I1$:IF AR THEN 534:REM*134
524 GOSUB 43Ø:DOPEN#2,(A$),U(DR
    ),W:IF DS THEN GOSUB 168:GO
    TO 534               :REM*229
526 GOSUB 2ØØ:FOR I=1 TO MR:X$=
    "":IF DE%(I) THEN 532
                         :REM*129
528 FOR J=1 TO FC:RECORD#1,ID%(
    I),P%(J):GOSUB 2:IF A$="" T
    HEN A$=" "           :REM*23
53Ø X$=X$+A$+CR$:NEXT:PRINT#2,X
    $;                   :REM*93
532 NEXT:GOSUB 2Ø4       :REM*166
534 DCLOSE U(DR):GOTO 6Ø
                         :REM*238
536 IF DB$="" THEN A$="NO DATAB
    ASE OPEN!":GOSUB 186:GOTO 6
    Ø                    :REM*71
538 I1$=DB$:A$="":GOSUB 176:DB$
    =I1$:IF AR THEN 552:REM*244
54Ø GOSUB 43Ø:DOPEN#2,(A$)+",S"
    ,U(DR):IF DS THEN GOSUB 168
    :GOTO 552            :REM*2Ø4
542 GOSUB 2ØØ:I=MR:DO:I=I+1:DE%
    (I)=Ø:FOR J=1 TO FC:A$="":D
    O:GET#2,X$           :REM*1
544 IF X$=CR$ THEN EXIT :REM*75
546 A$=A$+X$:LOOP UNTIL ST OR L
    EN(A$)=255           :REM*151
548 X=ST:RECORD#1,I,P%(J):PRINT
    #1,A$:NEXT:ID%(I)=I:LOOP UN
    TIL X                :REM*29
55Ø MR=I:GOSUB 2Ø4       :REM*124
552 DCLOSE U(DR):GOTO 6Ø:REM*27
554 MC=MC(MU):MX=X:POKE 2Ø8,Ø:P
    RINT LA$;            :REM*3
556 J=1:FOR X=1 TO MC:SO%(X)=4Ø
    ØØ+J*5ØØ:J=J-(MU$(MU,X)<>""
    ):NEXT               :REM*179
558 WINDOW C,R,C+W,R+MC+3:IF MX
     THEN MY=MX:GOSUB 578:GOTO
    566:ELSE GOSUB 58Ø :REM*174
56Ø CHAR1,(W-LEN(MU$(MU,Ø))+1)/
    2,1,RD$+MU$(MU,Ø)+GR$
                         :REM*51
562 FOR MY=1 TO MC:CHAR 1,1,MY+
    2,LEFT$(" "+MU$(MU,MY)+SP$,
    W-1):NEXT:MX=1       :REM*212
564 DO WHILE MU$(MU,MX)="":MX=M
    X+1:LOOP             :REM*194
566 GOSUB576:DO:GETKEY A$
                         :REM*221
568 IF A$=DN$ THEN MX=MX*-(MX<M
    C)+1:GOTO 572        :REM*1Ø8
57Ø IF A$=UP$ THEN MX=MX-1+MC*-
    (MX=1):ELSE 574      :REM*193
572 IF MU$(MU,MX)="" THEN 568:E
    LSE SOUND 1,SO%(MX),5:GOSUB
     578:GOSUB 576       :REM*154
574 LOOP UNTIL A$=CR$:X=MX:RETU
    RN                   :REM*19Ø
576 CHAR 1,1,MX+2,LEFT$(" "+MU$
    (MU,MX)+SP$,W-1),1:MY=MX:RE
    TURN                 :REM*226
578 CHAR 1,1,MY+2,LEFT$(" "+MU$
    (MU,MY)+SP$,W-1):RETURN
                         :REM*199
58Ø WC=RWINDOW(1):WR=RWINDOW(Ø)
    -1:X$="{SHFT -}"+LEFT$(SP$,
    PEEK(231)-PEEK(23Ø)-1)+"{SH
    FT -}"               :REM*31
582 PRINT CHR$(27)"M"UC$BL$CHR$
    (213)LEFT$(LB$,WC-1)CHR$(2Ø
    1)                   :REM*38
584 FOR WW=1 TO WR:PRINT X$:NEX
    T                    :REM*164
586 PRINT CHR$(2Ø2)LEFT$(LB$,WC
    -1)CHR$(2Ø3)GR$LC$CHR$(27)"
    L";:RETURN           :REM*114
588 GOSUB 72:WINDOW Ø,Ø,79,24,1
    :X=Ø                 :REM*2Ø6
59Ø R=Ø:C=Ø:W=15:MU=4:GOSUB554
                         :REM*186
592 ON X GOTO 61Ø,596    :REM*29
594 DCLOSE U(DR):GOTO 6Ø:REM*45
596 WINDOW Ø,21,2Ø,24:GOSUB 58Ø
    :A$=""               :REM*32
598 WINDOW 2,22,19,23:PRINT RD$
    "CURRENT DRIVE:"DR;CR$"{SHF
    T C}HANGE TO: ";     :REM*153
6ØØ L=2:FL=1:GOSUB 6:IF AR THEN
     A=DR:GOTO 6Ø8       :REM*87
6Ø2 IF A<8 OR A>11 THEN SOUND 1
    ,7ØØ,5:GOTO 598      :REM*2Ø7
6Ø4 CLOSE 15:OPEN15,A,15,"IØ:":
    CLOSE 15:IF AR THEN 596
                         :REM*4Ø
6Ø6 IF DS THEN GOSUB 168:GOTO 6
    ØØ                   :REM*145
6Ø8 DR=A:WINDOW Ø,21,2Ø,24,1:X=
    2:GOTO 59Ø           :REM*9
61Ø WINDOW 4Ø,Ø,7Ø,21:GOSUB 58Ø
    :WINDOW 42,1,69,2Ø:SLOW:DIR
    ECTORY:FAST          :REM*148
612 A$=LA$+LA$:GOSUB 186:WINDOW
     4Ø,Ø,7Ø,21,1:X=1:GOTO 59Ø
                         :REM*233
614 IF DB$="" THEN A$="{SHFT N}
    O DATABASE OPEN!":GOSUB 186
    :GOTO 6Ø:ELSE GOSUB 72
```

```
                                :REM*17Ø
616 WINDOW Ø,Ø,79,24,1:X=Ø
                                :REM*35
618 R=Ø:C=Ø:W=14:MU=5:GOSUB554:
    ON X GOTO 62Ø,696,6Ø:REM*15
62Ø PRINT HM$HM$CS$:WINDOW 32,Ø
    ,48,2:GOSUB 58Ø:WINDOW 33,1
    ,47,1                       :REM*9
622 PRINT RD$" CREATE REPORT"GR
    $;                          :REM*25
624 WINDOW Ø,Ø,26,2,1:GOSUB 58Ø
    :WINDOW 2,1,25,1    :REM*2Ø5
626 PRINT RD$"PAGE WIDTH (1Ø-96
    ): ";:A$=MID$(STR$(PW),2):L
    =2:FL=1:GOSUB 6             :REM*5
628 IF AR THEN 614:ELSE:IF A<1Ø
     OR A>96 THEN 624:ELSE:PW=A
                                :REM*55
63Ø WINDOW 54,Ø,79,2,1:GOSUB 58
    Ø:WINDOW 56,1,78,1  :REM*139
632 PRINT RD$"LEFT MARGIN (Ø-"M
    ID$(STR$(PW-1Ø),2)"): ";
                                :REM*17
634 A$=MID$(STR$(LM),2):L=2:FL=
    1:GOSUB 6:IF AR=1 THEN 624
                                :REM*13
636 IF A<Ø OR A>PW-1Ø THEN 63Ø:
    ELSE LM=A                   :REM*187
638 WINDOW 2Ø,3,59,6,1:GOSUB 58
    Ø:WINDOW 33,4,58,4  :REM*1Ø3
64Ø PRINT RD$"- HEADING -";:WIN
    DOW 22,5,58,5               :REM*159
642 A$=HD$:L=36:FL=Ø:GOSUB 6:IF
     AR=1 THEN 63Ø:ELSE HD$=A$
                                :REM*13Ø
644 FOR I=1 TO FC:A$(I)=FE$(I):
    A$(1ØØ+I)="":NEXT   :REM*13Ø
646 CR=Ø:MU=6:MC(MU)=FC+1:MU$(M
    U,Ø)="SELECT FIELDS":REM*95
648 FOR I=1 TO FC:MU$(MU,I)=A$(
    I):NEXT:MU$(MU,FC+1)=RD$+"D
    ONE"+GR$                    :REM*19Ø
65Ø WINDOW 62,3,79,4+FC,1:GOSUB
     58Ø:WINDOW 64,3,78,3+FC:IF
     CR=Ø THEN 654              :REM*126
652 FOR I=1 TO FC:PRINT CR$GR$A
    $(1ØØ+I);:NEXT              :REM*56
654 R=3:W=17:C=Ø:X=Ø:WINDOW C,R
    ,C+W,R+MC(MU)+3,1           :REM*66
656 IF CR=FC THEN 668:ELSE:GOSU
    B 554:IF X>FC THEN 668
                                :REM*73
658 A=Ø:FOR I=1 TO CR:A=A+FS%(S
    %(I)):NEXT:IF A+FS%(X)<=PW-
    LM THEN 666                 :REM*179
66Ø WINDOW 23,1Ø,56,12,1:GOSUB
    58Ø:WINDOW 26,11,55,11
                                :REM*2ØØ
662 PRINT RD$"REPORT TOO NARROW
     FOR FIELD!"GR$;:SOUND 1,7Ø
    Ø,2Ø                        :REM*6
664 GETKEY A$:WINDOW 23,1Ø,56,1
    2,1:GOTO 654                :REM*95
666 CR=CR+1:A$(1ØØ+CR)=A$(X):S%
    (CR)=X:A$(X)="":GOTO 648
                                :REM*19
668 IF CR=Ø THEN 614        :REM*1Ø
67Ø WINDOW 25,1Ø,54,12,1:GOSUB
    58Ø:WINDOW 27,11,53,11
                                :REM*145
672 PRINT RD$"SCREEN OR PRINTER
     (S/P)? "GR$;:L=1:F=3:G$="S
    P":A$="S":GOSUB 6           :REM*42
674 WINDOW Ø,3,79,24,1:A=3:IF A
    $="P" THEN A=4              :REM*127
676 GOSUB 43Ø:CLOSE 4:OPEN 4,A,
    7                           :REM*195
678 PC=9E9:FOR I=1 TO MR:IF PC>
    56 THEN GOSUB 688           :REM*7
68Ø IF DE%(I)=Ø THEN BEGIN:PRIN
    T#4,LEFT$(SP$,LM); :REM*143
682 FOR J=1 TO CR:RECORD#1,ID%(
    I),P%(S%(J)):GOSUB 2 :REM*3
684 PRINT#4,LEFT$(A$+SP$,FS%(S%
    (J))+1);:NEXT:PRINT#4:PC=PC
    +1:BEND                     :REM*22
686 NEXT:PRINT#4:PRINT:CLOSE 4:
    CLOSE 1:A$="REPORT COMPLETE
    ":GOSUB 186:GOTO614:REM*249
688 IF PC<99 THEN FOR J=1 TO 1Ø
    :PRINT#4:NEXT               :REM*79
69Ø PRINT#4,LEFT$(SP$,(PW-LEN(H
    D$))/2)+HD$+CR$:PRINT#4,LEF
    T$(SP$,LM);                 :REM*3Ø
692 FOR J=1 TO CR:PRINT#4,LEFT$
    (FE$(S%(J))+SP$,FS%(S%(J)))
    +" ";:NEXT                  :REM*47
694 PRINT#4,CR$:PC=4:RETURN
                                :REM*1Ø2
696 FOR I=1 TO FC:S%(I)=I:NEXT:
    LM=Ø:PW=96:HD$="":CR=FC:GOT
    O 668                       :REM*248
698 IF FRE(Ø)=FRE(1) THEN PRINT
     "C128 ONLY!":END   :REM*187
7ØØ SCNCLR Ø:SCNCLR 5:COLOR Ø,1
    :COLOR 5,14:COLOR 4,1:COLOR
     6,1                        :REM*114
7Ø2 IF RWINDOW(2)=4Ø THEN BEGIN
                                :REM*1Ø8
7Ø4 PRINT"ENABLE 8Ø COLUMN SCRE
    EN"CHR$(13)"AND PRESS A KEY
    ":GETKEY X$                 :REM*192
7Ø6 GRAPHIC5:BEND               :REM*36
7Ø8 PRINT CHR$(147):PRINT" PLEA
    SE WAIT"                    :REM*49
71Ø FAST:RESTORE:I$="ABCDEFGHIJ
    KLMNOPQ":I$=I$+I$+I$+I$+I$:
    I$=I$+I$+I$                 :REM*31
712 DR=PEEK(186):LC$=CHR$(14)+C
    HR$(11):UC$=CHR$(142)+CHR$(
```


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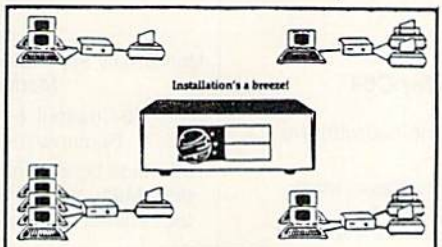

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Circle 51 on Reader Service card.

```
    11):IN$=CHR$(148)   :REM*238
714 BE$=CHR$(7):RV$=CHR$(18):RO
    $=CHR$(146):RA$=CHR$(29):LA
    $=CHR$(157)         :REM*105
716 UP$=CHR$(145):DN$=CHR$(17):
    HM$=CHR$(19):CS$=CHR$(147):
    CR$=CHR$(13)        :REM*84
718 RD$=CHR$(28):GR$=CHR$(30):B
    L$=CHR$(154):DL$=CHR$(20):F
    L$=CHR$(15)         :REM*192
720 DIM A$,DB$,HD$,G$,I1$,I2$,V
    $,X$,A,AR,C,CR,CX,F,FC,FL,I
    ,I1,I2,J,J1,J2,K,L  :REM*163
722 DIM LM,MC,MR,MX,MY,MU,P,PW,
    R,RL,SV,T,W,WC,WR,WS,WW,X
                        :REM*176
724 DIM MU$(6,16),MC(6),SO%(16)
    ,FE$(16),FT$(16),FS%(16),R$
    (16),P%(16)         :REM*56
726 DIM A$(2000),S%(2000),ID%(2
    000),FK%(9),WS%(4),DE%(2000
    )                   :REM*71
728 FORI=0 TO 9:SP$=SP$+"{8 SPA
    CEs}":FK%(I)=PEEK(4096+I):P
    OKE 4096+I,0:NEXT   :REM*203
730 LB$=CHR$(192):FOR I=0 TO 6:
    LB$=LB$+LB$:NEXT:LB$=LEFT$(
    LB$,78)             :REM*28
732 FORI=2816 TO 2870:READ A:PO
    KE I,A:NEXT         :REM*55
734 READ X:FOR I=1 TO X:READ MC
    (I):FOR J=0 TO MC(I):READ M
    U$(I,J):NEXT:NEXT   :REM*37
736 PRINT CHR$(27),"S"CHR$(27)"
    F";:SYS 52639:GOTO 60
                        :REM*140
738 GOSUB 72:WINDOW 0,0,79,24,1
                        :REM*55
740 FORI=0TO9:POKE4096+I,FK%(I)
    :NEXT:PRINT CHR$(27)"S"GR$:
    END                 :REM*161
742 DATA 160,2,169,47,162,1,32,
    116,255,153,248,0,200,192,6
    ,208,241,162,1      :REM*250
744 DATA 32,198,255,32,228,255,
    201,13,240,23,164,253,162,2
    51,142,185,2,162    :REM*142
746 DATA 1,32,119,255,200,132,2
    53,196,250,240,4,165,144,24
    0,226,76,204,255    :REM*87
748 DATA 5,15,"{SHFT R}{SHFT U}
    {SHFT N}BASE 128 {SHFT M}EN
    U","{SHFT C}REATE A DATABAS
    E","{SHFT O}PEN A DATABASE"
                        :REM*76
750 DATA "{SHFT C}LOSE DATABASE
    ","","{SHFT E}DIT DATABASE"
    ,"{SHFT V}IEW DATABASE","{S
    HFT P}ACK DATABASE" :REM*12
752 DATA "{SHFT I}NDEX DATABASE
    ","","{SHFT I}MPORT SEQ FIL
    E","{SHFT E}XPORT SEQ FILE"
    ,""                 :REM*89
754 DATA "{SHFT P}RINT REPORTS"
    ,"{SHFT D}ISK DRIVE STUFF",
    "{SHFT B}ACK TO BASIC"
                        :REM*221
756 DATA 12,"{SHFT E}DIT MENU",
    "{SHFT E}DIT RECORD","{SHFT
     A}DD RECORD","","{SHFT N}E
    XT RECORD"          :REM*193
758 DATA "{SHFT P}REV RECORD","
    {SHFT G}OTO RECORD","{SHFT
    G}OTO TOP","{SHFT G}OTO BOT
    TOM"                :REM*125
760 DATA "","{SHFT S}EARCH","{S
    HFT T}OGGLE DELETE","{SHFT
    E}XIT"              :REM*97
762 DATA 3,"{SHFT V}IEW MENU","
    {SHFT V}IEW RECORDS","{SHFT
     S}TATISTICS","{SHFT E}XIT"
                        :REM*209
764 DATA 3,"{SHFT D}{SHFT O}{SH
    FT S} MENU","{SHFT D}IRECTO
    RY","{SHFT C}HANGE DRIVE","
    {SHFT E}XIT"        :REM*152
766 DATA 3,"{SHFT R}EPORT MENU"
    ,"{SHFT R}EPORT","{SHFT D}U
    MP","{SHFT E}XIT"   :REM*187
```

■

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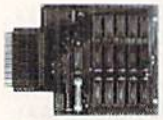

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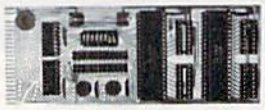

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From p. 36.

```
3000 PRINT"{CRSR DN}{SHFT P}RES
     S {CTRL 9}{SHFT R}ETURN{CT
     RL 0} OR {CTRL 9}{SHFT Q}{
     CTRL 0} TO {SHFT Q}UIT";
                          :REM*154
3010 GET A$:IF A$<>"" THEN3010
                          :REM*195
3020 GET A$:IF A$<>CHR$(13) AND
      A$<>"Q" THEN3020 :REM*185
3030 IF A$="Q" THEN RETURN
                          :REM*214
3040 PRINT"{SHFT CLR)";:GOTO306
     0                    :REM*168
3050 FOR J=1 TO 5:PRINT CHR$(13
     ):NEXT               :REM*162
3060 GOSUB3090:NEXT       :REM*33
3070 IF X$="P" THEN PRINT#4:CLO
     SE4:RETURN           :REM*165
3080 GOSUB4000:RETURN     :REM*209
3090 LC=22:IFX$="P" THEN LC=55:
     PRINT TAB(33);       :REM*254
3100 IF X$="S" AND CC=0 THEN LC
     =42                  :REM*95
3110 PRINT"{SHFT C}{SHFT H}{SHF
     T E}{SHFT C}{SHFT K} {SHFT
      R}{SHFT E}{SHFT G}{SHFT I
     }{SHFT S}{SHFT T}{SHFT E}{
     SHFT R}":PRINT       :REM*159
3120 PRINT"#{4 SPACEs}{SHFT D}{
     SHFT A}{SHFT T}{SHFT E}{7
     SPACEs}{SHFT C}{SHFT A}{SH
     FT T}{2 SPACEs}{SHFT D}{SH
     FT E}{SHFT S}{SHFT C}{SHFT
      R}{SHFT I}{SHFT P}{SHFT T
     }{SHFT I}{SHFT O}{SHFT N}{
     14 SPACEs}{SHFT C}{SHFT K}
     #{3 SPACEs}{SHFT C}{SHFT K
     } {SHFT A}{SHFT M}{SHFT O}
     {SHFT U}{SHFT N}{SHFT T}{2
      SPACEs}";           :REM*105
3130 PRINT"{SHFT D}{SHFT E}{SHF
     T P}{SHFT O}{SHFT S}{SHFT
     I}{SHFT T}{2 SPACEs}{SHFT
     B}{SHFT A}{SHFT L}{SHFT A}
     {SHFT N}{SHFT C}{SHFT E}"
                          :REM*148
3140 IF X$="S" AND CC=40 THEN P
     RINT LINE$;:GOTO3170
                          :REM*212
3150 PRINT"--{3 SPACEs}--------
     -{2 SPACEs}---{2 SPACEs}--
     ----------------------{2 SP
     ACEs}----{2 SPACEs}-------
     --{2 SPACEs}";       :REM*149
3160 PRINT"--------{2 SPACEs}---
     ----"                :REM*30
3170 RETURN               :REM*252
3180 NB$=STR$(INT(BAL*100+.5)/1
     00)                  :REM*175
3190 X=LEN(NB$):FOR J=1 TO X
                          :REM*145
3200 IF MID$(NB$,J,1)="." THEN3
     230                  :REM*224
3210 NEXT                 :REM*1
3220 NB$=NB$+".00":GOTO3240
                          :REM*214
3230 IF J=X-1 THEN NB$=NB$+"0":
     J=X:NEXT             :REM*47
3240 IF LE>0 THEN NB$=RIGHT$("{
     10 SPACEs}"+NB$,LE)
                          :REM*125
3250 RETURN               :REM*77
3260 TTAL=0:YTD=0:AVE=0:S=0
                          :REM*209
3270 GOSUB2770:IF X$="Q" THEN R
     ETURN                :REM*129
3280 GOSUB3580            :REM*34
3290 S=S+1                :REM*52
3300 TTAL=TTAL+VAL(CAT$(S,2)):Y
     TD=YTD+VAL(CAT$(S,3))
                          :REM*222
3310 IF CAT$(S,1)<>"END" THEN32
     90                   :REM*46
3320 S=0                  :REM*48
3330 S=S+1                :REM*92
```

Continued on p. 62.

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From p. 59.

```
334Ø IF CAT$(S,1)="END" THEN348
     Ø                    :REM*142
335Ø IF CAT$(S,3)="" OR CAT$(S,
     3)="Ø" THEN333Ø      :REM*253
336Ø B$=LEFT$(CAT$(S,1)+"{6 SPA
     CEs}",6)             :REM*119
337Ø BAL=VAL(CAT$(S,2)):LE=8:GO
     SUB318Ø:C$=NB$       :REM*28
338Ø X=VAL(CAT$(S,2))/TTAL:X=IN
     T(X*1ØØ+.5):D$=RIGHT$("{4
     SPACEs}"+STR$(X),4)
                          :REM*1Ø9
339Ø BAL=VAL(CAT$(S,3)):LE=9:GO
     SUB318Ø:E$=NB$       :REM*148
34ØØ X=VAL(CAT$(S,3))/YTD:X=INT
     (X*1ØØ+.5):F$=RIGHT$("{4 S
     PACEs}"+STR$(X),4)   :REM*47
341Ø BAL=VAL(CAT$(S,3))/COUNT:L
     E=9:GOSUB318Ø:G$=NB$
                          :REM*7Ø
342Ø AVE=AVE+VAL(G$)      :REM*128
343Ø IF X$="P" OR CC=Ø THEN PRI
     NT B$;" ";C$;D$;" ";E$;F$;
     " ";G$:GOTO333Ø      :REM*1Ø9
344Ø PRINT B$;C$;D$;E$;F$;G$;
                          :REM*119
345Ø LC=LC-1:IF LC>7 THEN333Ø
                          :REM*17Ø
346Ø GOSUB4ØØ:PRINT"{SHFT CLR}"
     ;                    :REM*154
347Ø GOSUB358Ø:GOTO333Ø   :REM*97
348Ø BAL=TTAL:LE=9:GOSUB318Ø:B$
     =NB$                 :REM*167
349Ø BAL=YTD:LE=9:GOSUB318Ø:C$=
     NB$                  :REM*29
35ØØ BAL=AVE:LE=1Ø:GOSUB318Ø:D$
     =NB$                 :REM*166
351Ø IF X$="S" AND CC=4Ø THEN35
     4Ø                   :REM*171
352Ø PRINT TAB(7)"--------"SPC(
     6)"--------"SPC(6)"-------
     -"                   :REM*7
353Ø PRINT"{SHFT T}OTALS";B$;SP
     C(5);C$;SPC(4);D$:GOTO356Ø
                          :REM*139
354Ø PRINT SPC(6)"--------"SPC(
     5)"--------"SPC(5)"-------
     -";                  :REM*19Ø
355Ø PRINT"{SHFT T}OTAL";B$;SPC
     (4);C$;SPC(3);D$;    :REM*37
356Ø IF X$="P" THEN PRINT#4:CLO
     SE4:RETURN           :REM*189
357Ø GOSUB4ØØ:RETURN      :REM*185
358Ø PRINT"{SHFT P}{SHFT A}{SHF
     T Y}{SHFT M}{SHFT E}{SHFT
     N}{SHFT T} {SHFT A}{SHFT N
     }{SHFT A}{SHFT L}{SHFT Y}{
     SHFT S}{SHFT I}{SHFT S} -
     ";MO$;YEAR:IF X$="S" THEN
     LC=24:IF CC=4Ø THEN362Ø
                          :REM*59
359Ø PRINT:PRINT TAB(22);"{SHFT
      Y}{SHFT E}{SHFT A}{SHFT R
     }";SPC(1Ø);"{SHFT M}{SHFT
     O}{SHFT N}{SHFT T}{SHFT H}
     {SHFT L}{SHFT Y}     :REM*2
36ØØ PRINT"{SHFT C}{SHFT O}{SHF
     T D}{SHFT E}{5 SPACEs}{SHF
     T A}{SHFT M}{SHFT O}{SHFT
     U}{SHFT N}{SHFT T}{3 SPACE
     s}%{3 SPACEs}{SHFT T}{SHFT
      O} {SHFT D}{SHFT A}{SHFT
     T}{SHFT E}{3 SPACEs}%{3 SP
     ACEs}{SHFT A}{SHFT V}{SHFT
      E}{SHFT R}{SHFT A}{SHFT G
     }{SHFT E}"           :REM*48
361Ø PRINT"----{3 SPACEs}------
     --{2 SPACEs}--{2 SPACEs}--
     ------{2 SPACEs}--{2 SPACE
     s}--------":RETURN:REM*19Ø
362Ø PRINT:PRINT TAB(2Ø);"{SHFT
      Y}{SHFT E}{SHFT A}{SHFT R
     }";SPC(9);"{SHFT M}{SHFT O
     }{SHFT N}{SHFT T}{SHFT H}{
     SHFT L}{SHFT Y}"; :REM*176
363Ø PRINT"{SHFT C}{SHFT O}{SHF
     T D}{SHFT E}{4 SPACEs}{SHF
     T A}{SHFT M}{SHFT O}{SHFT
     U}{SHFT N}{SHFT T}{3 SPACE
     s}%{2 SPACEs}{SHFT T}{SHFT
      O} {SHFT D}{SHFT A}{SHFT
     T}{SHFT E}{3 SPACEs}%{2 SP
     ACEs}{SHFT A}{SHFT V}{SHFT
      E}{SHFT R}{SHFT A}{SHFT G
     }{SHFT E}";          :REM*1Ø5
364Ø PRINT"----{3 SPACEs}------
     -{2 SPACEs}--{2 SPACEs}---
     ----{2 SPACEs}--{2 SPACEs}
     -------";:RETURN     :REM*196
365Ø PRINT"{SHFT CLR}{3 CRSR DN
     s}{SHFT I}S YOUR PRINTER C
     ONNECTED?(Y/N)":GOSUB44Ø:R
     ETURN                :REM*64
366Ø PRINT"{SHFT CLR}{3 CRSR DN
     s}{SHFT R}EADING THE {SHFT
      B}UDGET FILE..... :REM*18
367Ø FOR I=1TOTN:TD$(I)="":CT$(
     I)="":DE$(I)="":CN$(I)="":
     CH$(I)="":DA$(I)="":REM*86
368Ø NEXT                 :REM*236
369Ø BM=MO:LE=8:CLOSE5:OPEN5,8,
     5,"BUDGET"+YEAR$+",S,R"
                          :REM*155
37ØØ GOSUB242Ø:IF EN=62 THEN CL
     OSE 5:GOTO378Ø       :REM*4Ø
371Ø IF EN>1 THEN366Ø     :REM*229
372Ø FOR I=1TO12:INPUT#5,INC$(I
     ):NEXT               :REM*56
373Ø FOR I=1TO12:S=Ø      :REM*211
374Ø S=S+1                :REM*253
375Ø INPUT#5,BU$(S,I)     :REM*1Ø3
376Ø IF CAT$(S,1)<>"END" THEN37
     4Ø                   :REM*111
377Ø NEXT:CLOSE5          :REM*118
378Ø PRINT"{SHFT CLR}{CRSR DN}{
     SHFT F}ILE: ";FILE$
                          :REM*147
379Ø PRINT"{CTRL 9}{CRSR DN}{12
      SPACEs}{SHFT E}{SHFT Z} {
     SHFT B}UDGET {SHFT M}ENU{1
     4 SPACEs}"           :REM*111
38ØØ PRINT:PRINT TAB(9);"{CTRL
     9}{CRSR DN}1{CTRL Ø} = {SH
     FT P}REPARE {SHFT B}UDGET
                          :REM*78
381Ø PRINT TAB(9);"{CTRL 9}{CRS
     R DN}2{CTRL Ø} = {SHFT R}E
     VISE {SHFT B}UDGET:REM*173
382Ø PRINT TAB(9);"{CTRL 9}{CRS
     R DN}3{CTRL Ø} = {SHFT B}U
     DGET {SHFT A}NALYSIS
                          :REM*117
383Ø PRINT TAB(9);"{CTRL 9}{CRS
     R DN}4{CTRL Ø} = {SHFT N}E
     W {SHFT M}ONTH"      :REM*13Ø
384Ø PRINT TAB(9);"{CTRL 9}{CRS
     R DN}5{CTRL Ø} = {SHFT R}E
     TURN TO {SHFT M}AIN {SHFT
     M}ENU"               :REM*212
385Ø PRINT TAB(9);"{CTRL 9}{CRS
     R DN}6{CTRL Ø} = {SHFT Q}U
     IT                   :REM*9
386Ø BM=MO:PRINT"{HOME}":CD=23:
     GOSUB141Ø:PRINT"{SHFT P}RE
     SS {SHFT H} FOR HELP MESSA
     GES";                :REM*193
387Ø PRINT"{HOME}":CD=16:GOSUB1
     41Ø:PRINT TAB(9);"{2 CRSR
     DNs}{SHFT E}NTER {SHFT S}E
     LECTION -"           :REM*95
388Ø GET X$:IF X$="H" THEN GOSU
     B548Ø:GOTO378Ø       :REM*75
389Ø IF CR=128 AND X$="5" THEN
     PRINT"{SHFT CLR}":GOSUB54Ø
     :GOTO64Ø             :REM*137
39ØØ IF X$<"1" OR X$>"6" THEN38
     8Ø                   :REM*45
391Ø ON VAL(X$) GOSUB393Ø,393Ø,
     461Ø,46Ø,11Ø,555Ø    :REM*1Ø
392Ø GOTO378Ø             :REM*166
393Ø PRINT"{SHFT CLR}" :REM*1Ø6
394Ø IF X$="2" OR BM=1 THEN XX=
     BM:GOTO397Ø          :REM*48
395Ø PRINT"{2 CRSR DNs}{SHFT L}
     IST BUDGET FOR PREVIOUS MO
     NTH?(Y/N)":GOSUB44Ø
                          :REM*48
396Ø XX=BM:IF A$="Y" THEN XX=BM
     -1                   :REM*91
397Ø PRINT"{SHFT CLR}":CD=24:GO
     SUB141Ø              :REM*236
398Ø IF X$="1" THEN PRINT"{SHFT
      E}NTER AMOUNT OR PRESS RE
     TURN";:GOTO4ØØØ      :REM*235
399Ø PRINT "{SHFT E}NTER CHANGE
     S OR PRESS RETURN";
                          :REM*251
4ØØØ S=Ø:X=Ø:TTAL=Ø:C=Ø:RESTORE
                          :REM*64
4Ø1Ø FOR I=1TO12:READ A$:IF I=B
     M THEN BM$=A$        :REM*244
4Ø2Ø NEXT                 :REM*38
4Ø3Ø PRINT"{HOME}{SHFT E}NTER E
     STIMATED PAYMENTS FOR: ";B
     M$;YEAR:PRINT        :REM*215
4Ø4Ø S=S+1                 :REM*3
4Ø5Ø IF CAT$(S,1)="END" THEN414
     Ø                    :REM*94
4Ø6Ø CAT$(S,1)=LEFT$(CAT$(S,1)+
     "{7 SPACEs}",7)      :REM*142
4Ø7Ø IF LEFT$(CAT$(S,1),3)="XXX
     " THEN412Ø           :REM*87
4Ø8Ø IF C=1 THEN411Ø      :REM*249
4Ø9Ø E$=BU$(S,XX):GOSUB37Ø:BU$(
     S,XX)=E$             :REM*49
41ØØ IF S>21 THEN PRINT TAB(22)
```

```
                              :REM*136
411Ø PRINT"{2 SPACEs}";CAT$(S,1
     );BU$(S,XX)              :REM*2Ø6
412Ø IF S=21 AND C=Ø THEN414Ø
                              :REM*175
413Ø GOTO4Ø4Ø                 :REM*112
414Ø IF C=1 THEN427Ø          :REM*69
415Ø IF S>21 THEN S=21:PRINT"{H
     OME}{CRSR DN}":GOTO417Ø
                              :REM*175
416Ø S=Ø:PRINT"{HOME}{CRSR DN}"
                              :REM*11Ø
417Ø S=S+1:E$=""              :REM*38
418Ø IF CAT$(S,1)="END" THEN427
     Ø                        :REM*169
419Ø IF LEFT$(CAT$(S,1),3)="XXX
     " THEN425Ø               :REM*123
42ØØ PRINT TAB(8):Y=-7:CL=14:IF
      S>21 THEN PRINT TAB(3Ø):Y
     =15:CL=36                :REM*2Ø8
421Ø GOSUB2ØØ:IF FLAG=Ø THEN E$
     =BU$(S,XX)               :REM*2Ø1
422Ø IF E$<>"" THEN GOSUB217Ø:E
     $=RIGHT$("{7 SPACEs}"+E$,7
     )                        :REM*24
423Ø PRINT TAB(8):IF S>21 THEN
     PRINT TAB(3Ø)            :REM*26
424Ø PRINT"{CRSR UP}";E$:BU$(S,
     BM)=E$:TTAL=TTAL+VAL(E$)
                              :REM*141
425Ø IF S=21 THEN PRINT"{HOME}{
     CRSR DN}":GOTO4Ø4Ø       :REM*96
426Ø GOTO417Ø                 :REM*231
427Ø BAL=TTAL:GOSUB318Ø:IF C=1
     THEN434Ø                 :REM*157
428Ø PRINT"{HOME}":CD=18:GOSUB1
     41Ø                      :REM*153
429Ø PRINT TAB(3Ø);"--------":P
     RINT TAB(18);"{SHFT T}OTAL
     {7 SPACEs}";NB$          :REM*131
43ØØ PRINT TAB(3Ø);INC$(XX):PRI
     NT TAB(18):INPUT"{CRSR UP}
     {SHFT E}ST INCOME";E$
                              :REM*2Ø6
431Ø GOSUB217Ø:E$=RIGHT$("{8 SP
     ACEs}"+E$,8):PRINT"{CRSR U
     P}";TAB(3Ø);E$:INC$(BM)=E$
                              :REM*233
432Ø BAL=VAL(E$)-TTAL:GOSUB318Ø
     :PRINT TAB(3Ø);"--------"
                              :REM*84
433Ø PRINT TAB(18);"{SHFT B}ALA
     NCE{5 SPACEs}";NB$:GOTO437
     Ø                        :REM*15Ø
434Ø PRINT TAB(8);"--------":PR
     INT"{SHFT T}OTAL{3 SPACEs}
     ";NB$                    :REM*7
435Ø PRINT"{SHFT I}NCOME{2 SPAC
     Es}";INC$(XX):PRINT TAB(8)
     ;"--------"              :REM*12
436Ø BAL=VAL(E$)-TTAL:GOSUB318Ø
     :PRINT"{SHFT B}ALANCE ";NB
     $:RETURN                 :REM*168
437Ø PRINT"{SHFT A}NY CHANGES?(
     {CTRL 9}Y/N{CTRL Ø}){12 SP
     ACEs}";:GOSUB44Ø         :REM*185
438Ø IF A$="Y" THEN XX=BM:GOTO3
     97Ø                      :REM*65
439Ø PRINT"{SHFT CLR}{3 CRSR DN
     s}{SHFT P}RINT BUDGET ON P
     RINTER?(Y/N)";:GOSUB44Ø:PR
     INT TAB(3Ø);A$           :REM*25Ø
44ØØ IF A$="N" THEN445Ø :REM*94
441Ø GOSUB365Ø:IF A$="N" THEN43
     9Ø                       :REM*26
442Ø PRINT"{SHFT CLR}{3 CRSR DN
     s}{SHFT P}RINTING....."
                              :REM*199
443Ø S=Ø:C=1:OPEN 4,4,7:CMD4:PR
     INT"{SHFT B}{SHFT U}{SHFT
     D}{SHFT G}{SHFT E}{SHFT T}
      - ";BM$;YEAR:PRINT
                              :REM*211
444Ø GOSUB4Ø4Ø:PRINT#4:CLOSE4
                              :REM*97
445Ø BM=BM+1:IF BM=13 THEN451Ø
                              :REM*184
446Ø IF X$="1" THEN PRINT"{SHFT
      CLR}{4 CRSR DNs}{SHFT P}R
     EPARE BUDGET FOR NEXT MONT
     H?(Y/N)";:GOTO448Ø
                              :REM*161
447Ø PRINT"{SHFT CLR}{4 CRSR DN
     s}{SHFT C}HANGE BUDGET FOR
      NEXT MONTH?(Y/N)";:REM*35
448Ø GOSUB44Ø                 :REM*194
449Ø PRINT TAB(36);A$         :REM*233
45ØØ IF A$="Y" THEN394Ø :REM*27
451Ø CLOSE5:OPEN5,8,5,"@Ø:BUDGE
     T"+YEAR$+",S,W"          :REM*189
452Ø GOSUB242Ø:IF EN>1 THEN447Ø
                              :REM*177
453Ø PRINT:PRINT"{CRSR DN}{SHFT
      S}AVING BUDGET....."
                              :REM*168
454Ø FOR I=1TO12              :REM*122
455Ø PRINT#5,INC$(I)+" ":NEXT
                              :REM*226
456Ø FOR I=1TO12:S=Ø          :REM*29
457Ø S=S+1                    :REM*63
458Ø PRINT#5,BU$(S,I)+" "
                              :REM*18
459Ø IF CAT$(S,1)<>"END" THEN45
     7Ø                       :REM*25Ø
46ØØ NEXT:CLOSE 5:RETURN :REM*2
461Ø R=Ø:GOSUB277Ø:IF X$="Q" TH
     EN RETURN                :REM*222
462Ø S=Ø:TTAL=Ø:BU=Ø:Z=Ø:C=Ø:IF
      X$="P" OR CC=Ø THEN C=1
                              :REM*175
463Ø S=S+1                    :REM*123
464Ø IF CAT$(S,1)="END" THEN S=
     Ø:GOTO468Ø               :REM*5
465Ø IF R=2 THEN FORI=1TO MO:BU
     =BU+VAL(BU$(S,I)):NEXT:TTA
```

Continued on p. 66.

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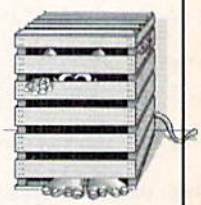

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Circle 65 on Reader Service card.

From p. 63.

```
    L=TTAL+VAL(CAT$(S,3))
                          :REM*95
466Ø IF R=Ø THEN BU=BU+VAL(BU$(
    S,MO)):TTAL=TTAL+VAL(CAT$(
    S,2))                 :REM*12
467Ø GOTO463Ø             :REM*152
468Ø IF X$="S" THEN PRINT"{SHFT
     CLR}";:LC=24         :REM*72
469Ø IF R=Ø THEN471Ø      :REM*148
47ØØ PRINT"{SHFT B}{SHFT U}{SHF
    T D}{SHFT G}{SHFT E}{SHFT
    T} {SHFT A}{SHFT N}{SHFT A
    }{SHFT L}{SHFT Y}{SHFT S}{
    SHFT I}{SHFT S} - "MO$;YEA
    R;" - {SHFT Y}EAR TO {SHFT
     D}ATE":PRINT:GOTO472Ø
                          :REM*139
471Ø PRINT"{SHFT B}{SHFT U}{SHF
    T D}{SHFT G}{SHFT E}{SHFT
    T} {SHFT A}{SHFT N}{SHFT A
    }{SHFT L}{SHFT Y}{SHFT S}{
    SHFT I}{SHFT S} - "MO$;YEA
    R:PRINT               :REM*61
472Ø PRINT"{SHFT C}{SHFT O}{SHF
    T D}{SHFT E}{5 SPACEs}{SHF
    T B}{SHFT U}{SHFT D}{SHFT
    G}{SHFT E}{SHFT T}{3 SPACE
    s}%{3 SPACEs}{SHFT A}{SHFT
     C}{SHFT T}{SHFT U}{SHFT A
    }{SHFT L}{3 SPACEs}%{3 SPA
    CEs}";:IF C=1 THEN PRINT"
    ";                    :REM*112
473Ø PRINT" {SHFT D}{SHFT I}{2
    SHFT Fs}";:IF C=1 THEN PRI
    NT                    :REM*5
474Ø PRINT"----{4 SPACEs}------
    -{2 SPACEs}--{2 SPACEs}---
    ----{2 SPACEs}--{2 SPACEs}
    ";:IF C=1 THEN PRINT" ";
                          :REM*242
475Ø PRINT"------";:IF C=1 THEN
     PRINT                :REM*31
476Ø S=S+1:Y=Ø            :REM*211
477Ø IF CAT$(S,1)="END" THEN495
    Ø                     :REM*223
478Ø CAT$(S,1)=LEFT$(CAT$(S,1)+
    "{7 SPACEs}",7)       :REM*88
479Ø IF R=2 THEN FORI=1TO MO:Y=
    Y+VAL(BU$(S,I)):NEXT:BAL=Y
    :GOSUB318Ø:B$=NB$     :REM*5Ø
48ØØ IF R=Ø THEN BAL=VAL(BU$(S,
    MO)):GOSUB318Ø:B$=NB$
                          :REM*23
481Ø BAL=VAL(CAT$(S,2)):IF R=2
    THEN BAL=VAL(CAT$(S,3))
                          :REM*37
482Ø GOSUB318Ø:N$=NB$     :REM*18Ø
483Ø IF VAL(N$)=Ø AND VAL(B$)=Ø
     THEN476Ø             :REM*141
484Ø BAL=VAL(N$)-VAL(B$):GOSUB3
    18Ø:E$=NB$            :REM*83
485Ø IF BU=Ø THEN Y$=" Ø":GOTO4
    88Ø                   :REM*138
486Ø X=VAL(B$)/BU:X=INT(X*1ØØ+.
    5):Y$=RIGHT$("{2 SPACEs}"+
    STR$(X),2)            :REM*146
487Ø IF TTAT=Ø THEN P$=" Ø":GOT
    O489Ø                 :REM*97
488Ø X=VAL(N$)/TTAL:X=INT(X*1ØØ
    +.5):P$=RIGHT$("{2 SPACEs}
    "+STR$(X),2)          :REM*15Ø
489Ø PRINT CAT$(S,1);B$;"{2 SPA
    CEs}";:IF B$="" THEN PRINT
     SPC(7)               :REM*24Ø
49ØØ PRINT Y$;" ";N$;"{2 SPACEs
    }";P$;:IF C=1 THEN PRINT"
    ";                    :REM*236
491Ø PRINT E$;:IF C=1 THEN PRIN
    T                     :REM*116
492Ø IF X$="P" THEN476Ø
                          :REM*2Ø3
493Ø LC=LC-1:IF LC>8 THEN476Ø
                          :REM*1Ø
494Ø GOSUB4ØØ:GOTO468Ø    :REM*253
495Ø BAL=TTAL:GOSUB318Ø:B$=NB$:
    BAL=BU:GOSUB318Ø:C$=NB$
                          :REM*1
496Ø BAL=VAL(B$)-VAL(C$):GOSUB3
    18Ø:D$=NB$            :REM*125
497Ø PRINT SPC(8)"-------{6 SPA
    CEs}-------{6 SPACEs}";:IF
     C=1 THEN PRINT" ";
                          :REM*176
498Ø PRINT"------";:IF C=1 THEN
     PRINT                :REM*112
499Ø PRINT"{SHFT T}OTAL{2 SPACE
    s}";C$;"{5 SPACEs}";B$;"{4
     SPACEs}";:IF C=1 THEN PRI
    NT" ";                :REM*227
5ØØØ PRINT D$;:IF C=1 THEN PRIN
    T                     :REM*172
5Ø1Ø IF R=Ø THEN5Ø3Ø       :REM*144
5Ø2Ø FORI=1TO MO:Z=Z+VAL(INC$(I
    )):NEXT:BAL=Z:GOSUB318Ø:F$
    =NB$:GOTO5Ø4Ø         :REM*159
5Ø3Ø BAL=VAL(INC$(MO)):GOSUB318
    Ø:F$=NB$              :REM*239
5Ø4Ø BAL=DEP:IF R=2 THEN BAL=CU
    M                     :REM*2Ø2
5Ø5Ø GOSUB318Ø:G$=NB$     :REM*12Ø
5Ø6Ø BAL=VAL(G$)-VAL(F$):GOSUB3
    18Ø:I$=NB$            :REM*156
5Ø7Ø PRINT"{SHFT I}NCOME ";F$;"
    {5 SPACEs}";G$;"{4 SPACEs}
    ";:IF C=1 THEN PRINT" ";
                          :REM*245
5Ø8Ø PRINT I$;:IF C=1 THEN PRIN
    T                     :REM*198
5Ø9Ø BAL=VAL(F$)-VAL(C$):GOSUB3
    18Ø:J$=NB$            :REM*151
51ØØ BAL=VAL(G$)-VAL(B$):GOSUB3
    18Ø:K$=NB$            :REM*178
511Ø BAL=VAL(K$)-VAL(J$):GOSUB3
    18Ø:L$=NB$            :REM*87
512Ø PRINT SPC(8)"-------{6 SPA
    CEs}-------{6 SPACEs}";:IF
     C=1 THEN PRINT" ";:REM*26
513Ø PRINT"------";:IF C=1 THEN
     PRINT                :REM*154
514Ø PRINT"{SHFT B}ALANCE";J$;"
    {5 SPACEs}";K$;"{4 SPACEs}
    ";:IF C=1 THEN PRINT" ";
                          :REM*82
515Ø PRINT L$;:IF C=1 THEN PRIN
    T                     :REM*115
516Ø IF X$="P" THEN PRINT#4:CLO
    SE4                   :REM*124
```

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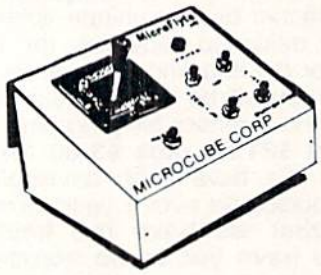

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```
517Ø IF R=2 GOTO521Ø    :REM*224
518Ø PRINT"{CRSR DN}{SHFT P}RIN
     T {SHFT Y}EAR-TO-DATE BUDG
     ET REPORT?(Y/N)";:GOSUB44Ø
                        :REM*199
519Ø IF A$="Y" THEN R=2:GOSUB28
     4Ø:GOTO462Ø        :REM*116
52ØØ RETURN             :REM*2Ø2
521Ø IF X$="P" THEN RETURN
                        :REM*81
522Ø GOSUB4ØØ:RETURN    :REM*4
523Ø PRINT"{SHFT CLR}{CTRL 2}{2
      CRSR DNs}{SHFT H}ELP MESS
     AGES ARE AVAILABLE THROUGH
     OUT"               :REM*4
524Ø PRINT"THE PROGRAM BY PRESS
     ING THE {SHFT H} KEY. {SHF
     T U}SE"            :REM*194
525Ø PRINT"LOWERCASE (UNSHIFTED
     ) FOR THIS AND":PRINT"OTHE
     R PROMPTS."        :REM*7
526Ø PRINT"{CRSR DN}{SHFT F}OR
     YOUR CONVENIENCE, DOLLAR A
     MOUNTS":PRINT"CAN BE ENTER
     ED ";              :REM*29
527Ø PRINT"WITH OR WITHOUT A DE
     C-":PRINT"IMAL POINT. {SHF
     T I}F NONE IS USED THE ";
                        :REM*252
528Ø PRINT"PROGRAM":PRINT"WILL
     PROPERLY INSERT THE DECIMA
     L.":GOSUB4ØØ:RETURN
                        :REM*1Ø3
529Ø CD=16:GOSUB141Ø:PRINT"{CTR
     L 9}{SHFT E}NTER MONTH AND
      YEAR AS 4 DIGITS, FOR"
                        :REM*136
53ØØ PRINT"{CTRL 9}EXAMPLE: 1Ø8
     7 OR Ø188 ":GOSUB4ØØ:RETUR
     N                  :REM*1Ø
531Ø PRINT"{CTRL 9}{SHFT I}F YO
     U ARE STARTING A NEW DISK,
     ";                 :REM*76
532Ø PRINT"{CTRL 9}USE OLD DISK
      UNTIL BALANCES ARE LOADED
      INTO COM-";       :REM*142
533Ø PRINT"{CTRL 9}PUTER. {SHFT
      T}HE NEW DISK CAN THEN BE
      USED.";:RETURN    :REM*99
534Ø CD=14:GOSUB141Ø:PRINT:PRIN
     T"{CTRL 9}{SHFT T}YPE {SHF
     T P} FOR PREVIOUS RECORD."
                        :REM*52
535Ø PRINT"{CRSR DN}{CTRL 9}{SH
     FT Y}OU CAN ADD A NEW {SHF
     T C}ATEGORY {SHFT C}ODE BY
      ENT-"             :REM*25
536Ø PRINT"{CTRL 9}ERING THE NE
     W CODE IN THE {SHFT C}ATEG
     ORY {SHFT C}ODE":PRINT"{CT
     RL 9}FIELD AND BY ";
                        :REM*82
537Ø PRINT"{CTRL 9}FOLLOWING TH
     E ON-SCREEN{3 SPACEs}":PRI
     NT"{CTRL 9}PROMPTS.":PRINT
      SP$;"{CRSR UP}"   :REM*1Ø9
538Ø GOSUB4ØØ:RETURN    :REM*164
539Ø PRINT"{CTRL 9}{SHFT T}YPE
     {SHFT S} TO SPLIT CHECK AM
     OUNT TO TWO OR ":PRINT"{CT
     RL 9}MORE {SHFT C}ATEGORY
     ";                 :REM*65
54ØØ PRINT"{CTRL 9}{SHFT C}ODES
     . {SHFT T}HIS WILL PLACE{3
      SPACEs}":PRINT"{CTRL 9}TH
     E SAME CHECK #, DATE, AND
     ";                 :REM*115
541Ø PRINT"{CTRL 9}DESCRIPTION"
     :PRINT"{CTRL 9}INTO THE NE
     XT TRANSACTION.";:RETURN
                        :REM*97
542Ø CD=16:GOSUB141Ø:PRINT"{CTR
     L 9}{SHFT E}NTER THE TRANS
     ACTION # YOU WISH TO{4 SPA
     CEs}"              :REM*11
543Ø PRINT"{CTRL 9}VIEW OR CHAN
     GE. {SHFT T}HIS # IS ON TH
     E {SHFT C}HECK ":PRINT"{CT
     RL 9}{SHFT R}EGISTER."
                        :REM*131
544Ø PRINT SP$:PRINT"{CRSR UP}"
     ;:GOSUB4ØØ:RETURN :REM*17Ø
545Ø PRINT"{CTRL 9}{5 CRSR DNs}
     {SHFT I}F THE COMPUTER ({S
     HFT C}-64 ONLY) STOPS WHIL
     E ";               :REM*7Ø
546Ø PRINT"{CTRL 9}PRINTING REP
     ORTS, WAIT 15-4Ø SEC UNTIL
     {2 SPACEs}PRINTING RESUMES
     . ";               :REM*45
547Ø PRINT"{CTRL 9}{SHFT T}HIS
     IS NORMAL AND IS CALLED {S
     HFT G}ARBAGE {SHFT C}OLLEC
     TION.":GOSUB4ØØ:RETURN
                        :REM*244
548Ø PRINT"{SHFT CLR}{CTRL 9}{S
     HFT W}HEN YOU PREPARE OR R
     EVISE THE BUDGET,{2 SPACEs
     }";                :REM*254
549Ø PRINT"{CTRL 9}ESTIMATED IN
     COME SHOULD BE THE ESTIMAT
     EDDEPOSITS TO YOUR ";
                        :REM*17Ø
55ØØ PRINT"{CTRL 9}CHECKING ACC
     OUNT.":GOSUB4ØØ:RETURN
                        :REM*2Ø6
551Ø DATA "{SHFT J}AN","{SHFT F
     }EB","{SHFT M}AR","{SHFT A
     }PR","{SHFT M}AY","{SHFT J
     }UN"               :REM*145
552Ø DATA "{SHFT J}UL","{SHFT A
     }UG","{SHFT S}EP","{SHFT O
     }CT","{SHFT N}OV","{SHFT D
     }EC"               :REM*32
553Ø DATA HOU,UTI,TEL,INS,SAV,C
     HA,CAS,GRO,AUT,GAS,ENT,RES
     ,CLO,DON           :REM*225
554Ø DATA MED,EQU,XXX,XXX,XXX,X
     XX,XXX,XXX,XXX,XXX,MIS,END
                        :REM*41
555Ø PRINT:PRINT TAB(8)"{SHFT A
     }RE YOU SURE?(Y/N):REM*181
556Ø GOSUB44Ø:IF A$="N" THEN143
     Ø                  :REM*49
557Ø CLOSE 15:CLOSE 5:IF CR=128
      THEN PRINT"{SHFT CLR}":EN
     D                  :REM*88
558Ø SYS 2Ø48           :REM*95 ■
```

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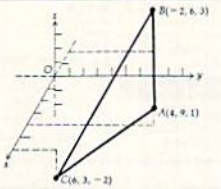

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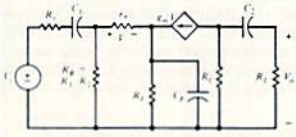

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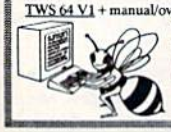

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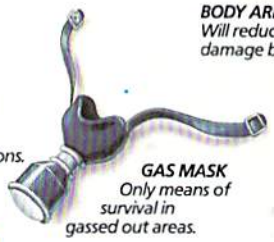

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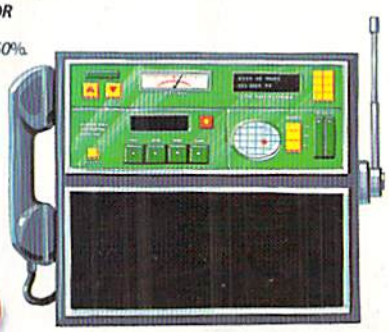

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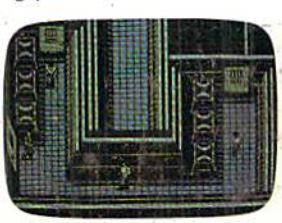

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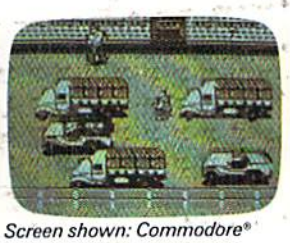

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